

PEPS SYSTEM

GENERAL INFORMATION	46-3	Electric Steering Column Lock (for MT)	46-71
Description	46-3	B150D 00	46-71
Operation	46-11	B150E 00	46-71
Tools	46-11	B150F 00	46-71
DIAGNOSIS & TESTING	46-20	B1511 00	46-71
Problem Symptoms Table	46-20	B1512 00	46-71
Starter Relay Inspection	46-21	B1513 00	46-71
Precautions for Starting System	46-22	ON-VEHICLE SERVICE	46-75
Diagnosis Procedure	46-23	PEPS Low Frequency Antenna	46-75
Problem Repair (No DTC)	46-25	Removal	46-75
Diagnostic Help	46-25	Installation	46-75
Intermittent DTC Troubleshooting	46-25	PEPS Control Module	46-76
Ground Inspection	46-26	Removal	46-76
Passive Entry & Passive Start (PEPS)		Installation	46-76
Controller Terminal List	46-26	Immobilizer Coil	46-77
Diagnostic Trouble Code (DTC) Chart	46-28	Removal	46-77
B1500 13	46-29	Installation	46-77
B1501 13	46-29	Passive Entry & Passive Start Button	46-78
B1516 19	46-29	Removal	46-78
B1517 23	46-29	Installation	46-78
B1502 13	46-36	Electronic Steering Column Lock (for MT)	46-79
B1504 13	46-36	Removal	46-79
B1506 00	46-43	Installation	46-79
B1507 00	46-48	Low Frequency Antenna	46-80
B1508 00	46-48	Removal	46-80
B1509 00	46-56	Installation	46-80
B1510 00	46-60		
B1514 00	46-64		

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

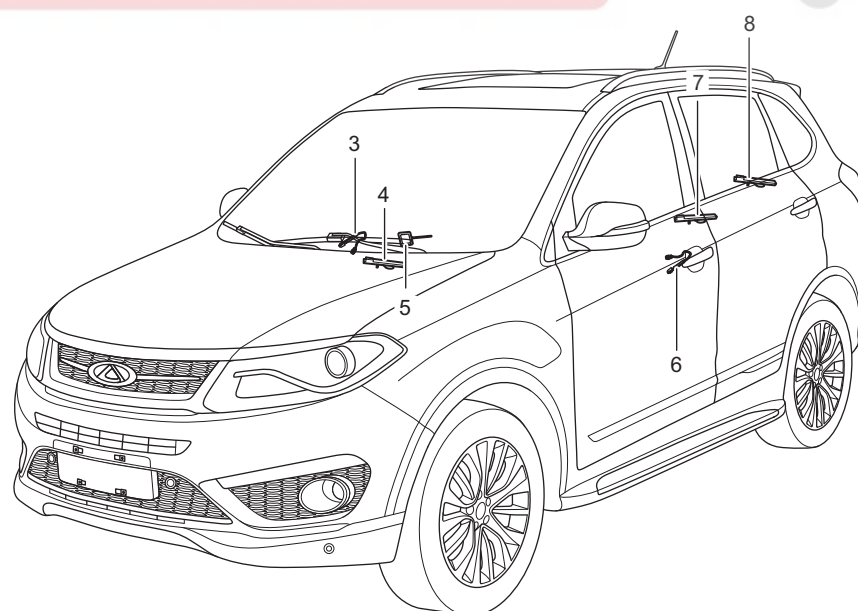
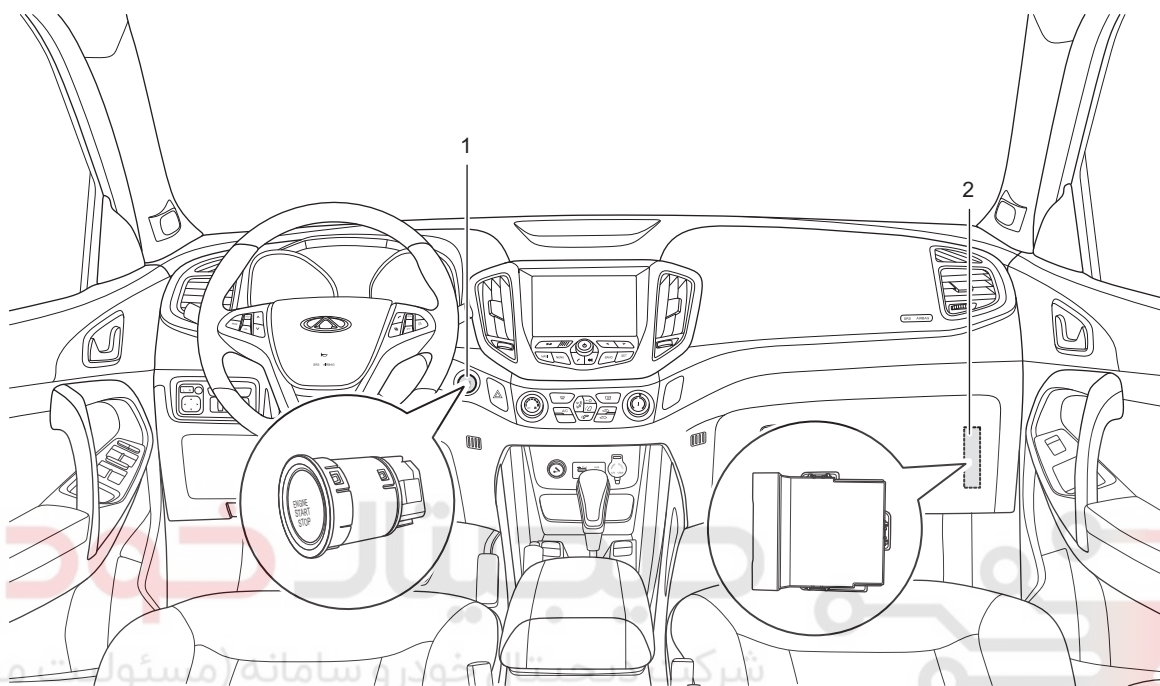
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GENERAL INFORMATION

Description

PEPS (for CVT)



RT21340310

46 - PEPS SYSTEM

1 - PEPS Module	2 - Front Right Door Handle Sensor
3 - Front Internal Low Frequency Antenna	4 - Rear Low Frequency Antenna
5 - Front Left Door Handle Sensor	6 - Rear Low Frequency Antenna (Rear Bumper Crossmember)
7 - Immobilizer Coil	8 - Passive Entry & Passive Start Switch

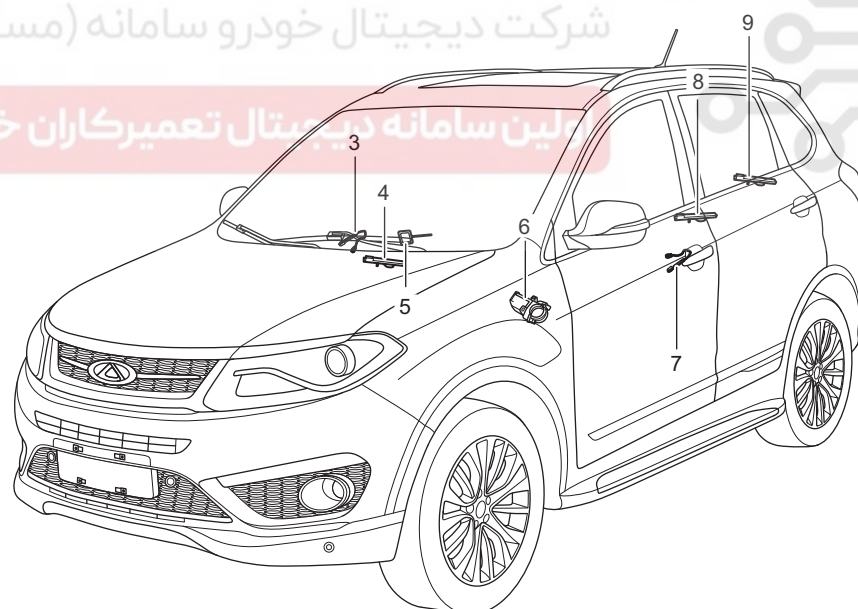
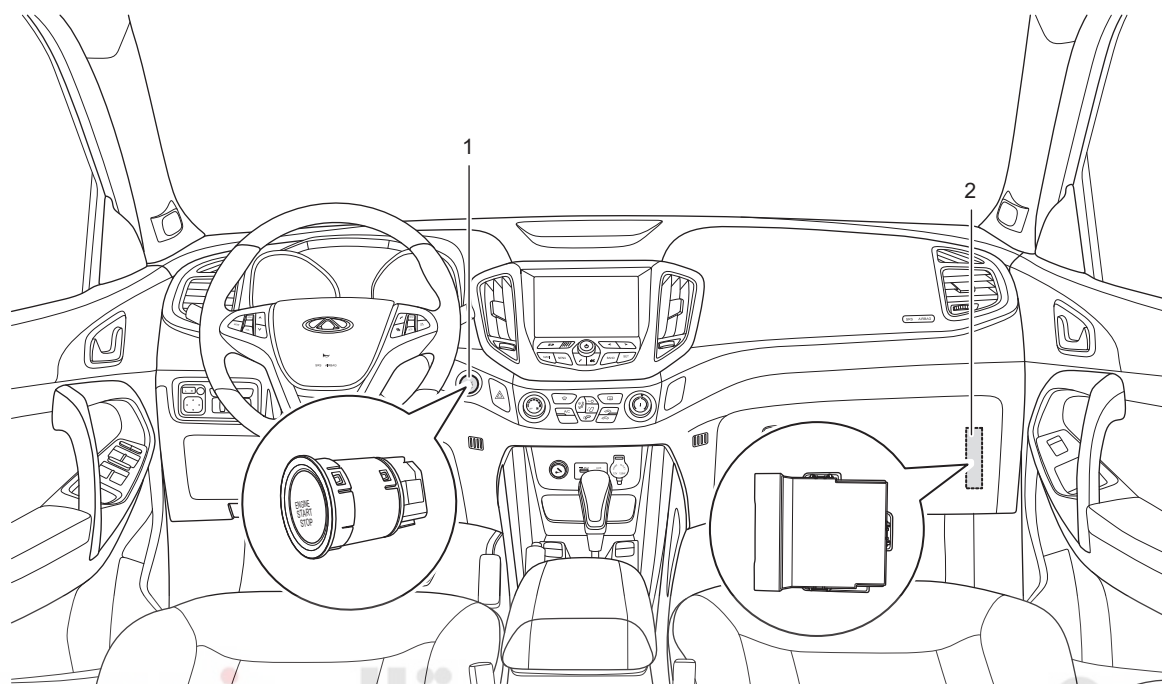
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PEPS (for MT)



RT21340320

1 - PEPS Module	2 - Front Right Door Handle Sensor
3 - Front Internal Low Frequency Antenna	4 - Electric Steering Column Lock (for MT)
5 - Rear Low Frequency Antenna	6 - Front Left Door Handle Sensor
7 - Rear Low Frequency Antenna (Rear Bumper Crossmember)	8 - Immobilizer Coil
9 - Passive Entry & Passive Start Switch	

Low Frequency Antenna Installation Positions and Functions

PEPS system consists of passive entry & passive start controller, passive entry & passive start switch, built-in low frequency antenna (2 antennas are equipped in vehicle to sense where the key is), immobilizer coil, front left/right door handle sensor, ESCL module (for MT model) and smart key. PEPS system is used to detect whether there is smart key around door and get authorization for keyless entry; there is one low frequency antenna inside of rear bumper, which is used to detect whether there is smart key around luggage compartment and get authorization for smart open of luggage compartment door.

The system has 5 functions as follows:

1. Keyless entry function;
2. Compatible general remote function;
3. One-button keyless start function;
4. Luggage compartment door smart open function;
5. Engine immobilizer function.

PEPS Module Installation Positions and Functions

RF antenna built-in PEPS module is used to receive signals sent from IMMO controller (for engine immobilizer control), and performs high speed CAN communication with BCM and EMS modules.

Precautions:

1. Make sure that the smart key is not covered by metal object and placed together with electromagnetic wave transmitter. Or, electromagnetic wave may be shielded or disturbed and smart key cannot be identified normally, thus causing the system to operate improperly.
2. When smart key battery is too weak, smart key cannot be identified correctly even if it is within detectable area and system cannot operate, please replace battery timely.
3. Every vehicle is provided with two smart keys, and the smart key must be matched before offline, every vehicle can be configured with 4 smart keys at most.

46 Smart key is mainly used for following functions

Passive entry mode: When smart key is within coverage area of low frequency antenna, it receives low frequency signal sent from door handle sensor and sends the corresponding high frequency feedback information.

RKE mode: Perform unlock and lock and open luggage compartment door by pressing different buttons on smart key.

Passive start mode: When smart key is in cab, it receives low frequency signal sent from internal low frequency antenna and sends the corresponding high frequency signal.

Degraded mode: When the built-in battery is discharged, take smart key as close as possible to immobilizer coil, until immobilizer coil can sense the ID information of smart key.

RF information sent from smart key must contain battery information, so that system can sense the current key battery condition. When smart key battery is too weak, system will inform user to replace smart key battery via instrument cluster if position information in RF information occurs abnormal misalignment.

Smart key will stop transmitting RF information when it is pressed for more than 20 seconds.

Passive Entry & Passive Start Switch Position and Operation

Start switch is located on instrument panel, used to request engine start or stop and indicate current condition of power supply. Start switch is only used for passive start system, not used for passive entry system.

After authorized user enters into vehicle, complete the corresponding operations before starting engine:

Depress brake pedal and press start switch to start engine. In normal mode, press start switch to stop engine when vehicle is stopped. When smart key cannot sense, entry can be completed by mechanical key and system can be started using following procedures.

1. Press the start switch
2. Take key as close as possible to rear cup holder symbol position

Smart Key Replacement

There are two match methods between smart key and system: "Replace with new key" and "Add old key".

"Replace with new key" is that match blank key and system; if user wants to add new key with old key carried, this method is applied.

"Add old key" is that rematch learned key and system, this method is mainly used in following two conditions:

1. If user lost the smart key and wanted to disable the lost smart key, he/she can delete all smart keys at after-sale service department, then use "Add old key" service to add the old key, so, only one smart key can be used, and the lost key cannot operate the vehicle.
2. If smart keyless entry and PEPS controller is damaged, but smart key is in good condition, replace PEPS module and use "Add old key" service to match the two old smart keys.

Immobilizer match descriptions of "replace with new key" are as follows:

1. Serviceman reads Vehicle Identification Number (VIN) in vehicle EMS using diagnostic tester, and obtains corresponding user personal identification (PIN) via VIN.
2. Enter immobilizer system procedure on diagnostic tester, select Delete all key menu.
3. Place the smart key to be matched on the key symbol in cup holder, enter immobilizer system procedure on diagnostic tester, select Add old key menu, input Vehicle Identification Number (VIN), then diagnostic tester will perform Add new key procedure automatically.
4. After completing Add old key procedure, press unlock button and check if left and right turn signal lights flash on instrument cluster. If so, it is indicated that new key match is completed; if not, new key match is not successful.

PEPS Match Process

Note: It is necessary to wait for 10 seconds to enter again when entering wrong security code twice continuously. If wrong security code is entered again after 10 seconds, wrong numbers cannot be accumulated. For example: if entering wrong security code twice continuously, but wrong security code is entered again after 10 seconds, internal counter will not record the current number and keep original number. If turning ignition switch to OFF without waiting specified time, waiting time will be reset to 0 and recount, so be sure to wait and turn ignition switch to ON.

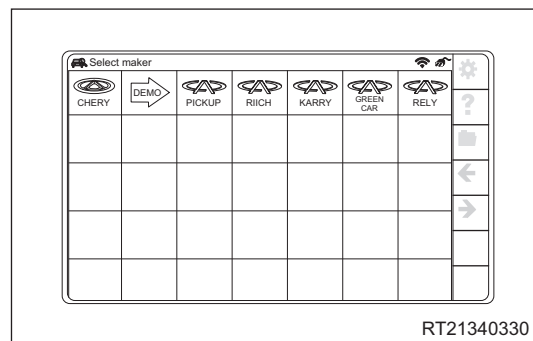
PEPS system menu operation instruction on X-431 diagnostic tester

1. X-431 main function menu
 - a. Read DTCs
 - b. Clear DTCs
 - c. Read DTCs
 - d. Write datastream
 - e. PEPS match

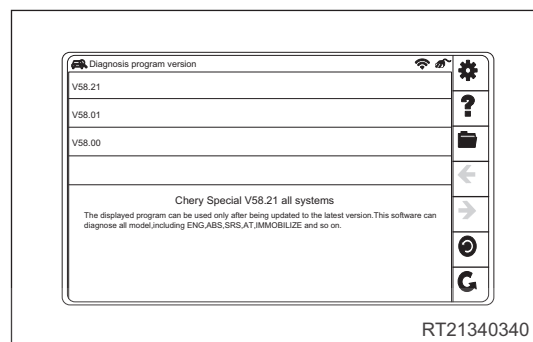
46 - PEPS SYSTEM

2. Diagnosis procedure and menu description

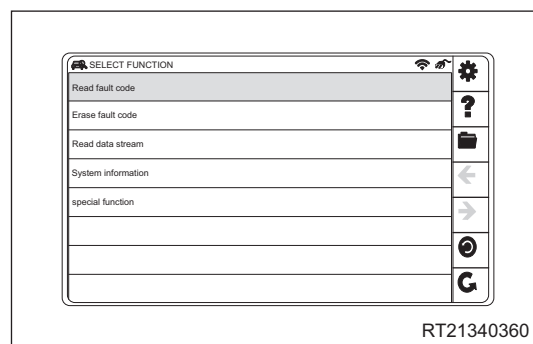
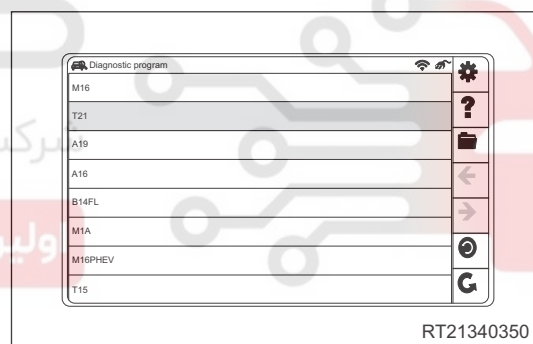
Use X-431 to enter PEPS system, first select Chery model as shown in illustration 1.



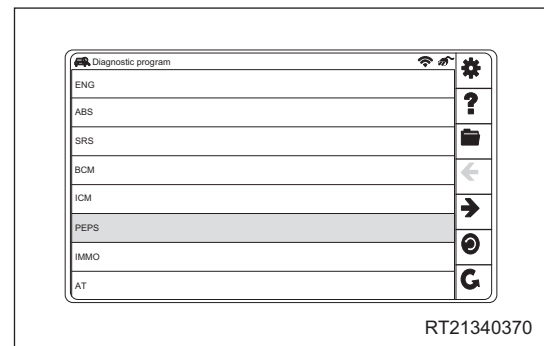
Enter Diagnosis program version menu, and select the highest version as shown in illustration 2.



Enter Diagnostic program menu and select T21 model. Click and enter Diagnostic program for this model as shown in illustrations 3 and 4.



Click and enter PEPS, SELECT FUNCTION menu is shown as illustration 5.



2.1.1 Read DTCs

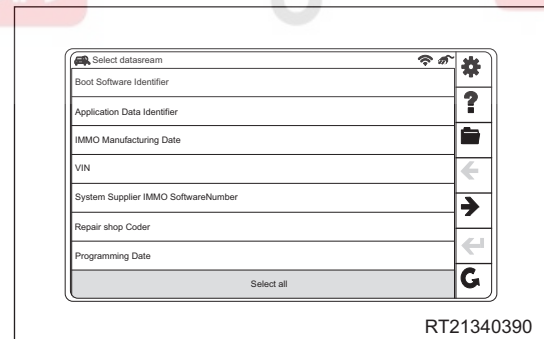
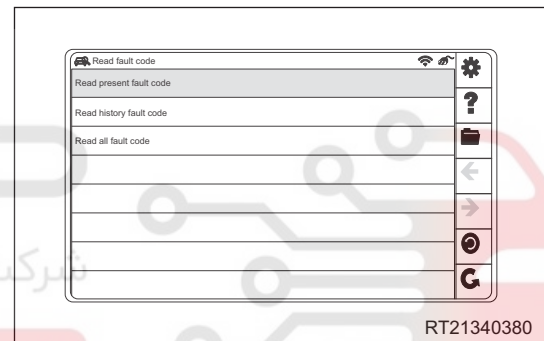
As shown in illustration 5, check current DTCs for immobilizer system by reading Diagnostic Trouble Codes (DTCs).

2.1.2 Clear DTCs

If DTC is read, it can be cleared using diagnostic tester. If the DTC can be read again after clearing, find out the cause of malfunction. As shown in illustration 5, perform DTC clearing after clearing DTC, read DTC again to confirm whether the DTC has been repaired.

2.1.3 Read datastream

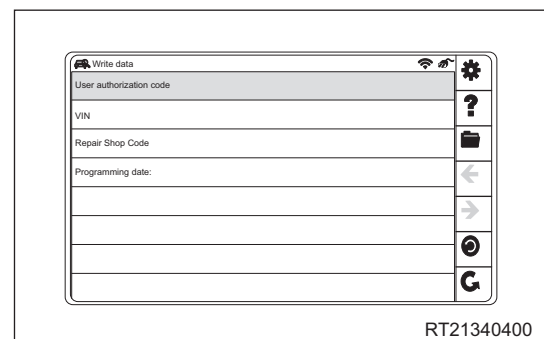
As shown in illustrations 6 and 7, dynamic datastream for current immobilizer system, immobilizer controller status, key status, engine ECU status, transmission TCU status and ESCL status can be checked by reading datastream.



46

2.1.4 Write datastream

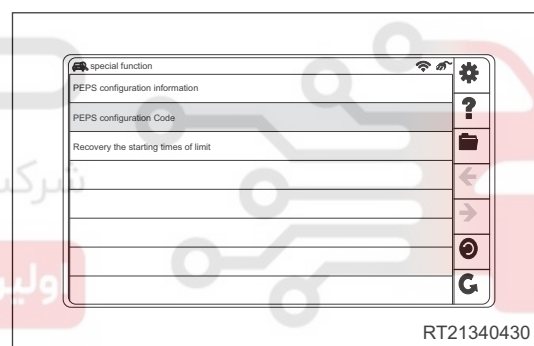
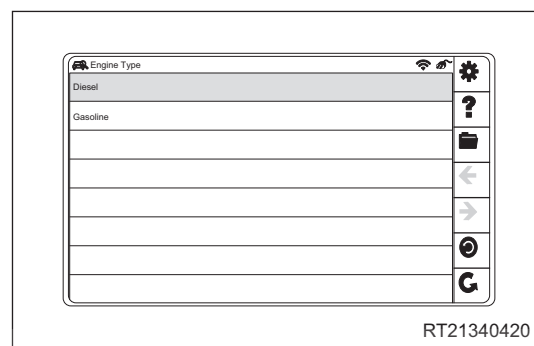
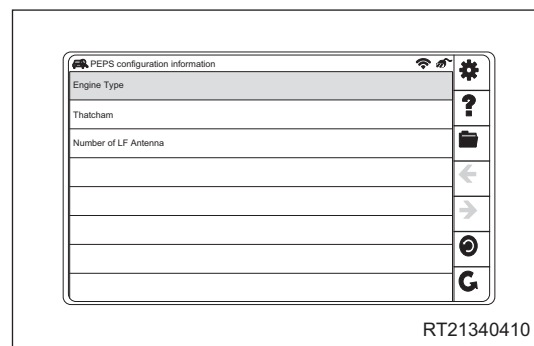
As shown in illustration 8, select Write Datastream and enter Write data screen. Then, User authorization code, VIN, Repair Shop Code and Programming date can be written.



46 - PEPS SYSTEM

2.1.5 PEPS Match (Immobilizer System Match)

As shown in illustrations 9, 10 and 11, select special function and enter PEPS configuration information.



1. As shown in illustration 9, PEPS match is also called immobilizer system match, and matching for engine immobilizer system (w/ PEPS and w/o PEPS) is performed in this menu.
2. Matching for engine immobilizer system and body anti-theft system (for T21 model with PEPS system) is synchronous; in other words, matching for engine immobilizer key is performed in this menu. Also, matching for body anti-theft system is performed simultaneously.
3. When performing matching for engine immobilizer key, it is necessary to put key in cup holder on auxiliary fascia console with front face of key upward, then perform matching (key matching for engine immobilizer (w/ PEPS)).
4. Matching method for engine immobilizer system and body anti-theft system (for T21 model without PEPS system) is the same as that of conventional model, and difference from T21 model with PEPS system is that matching for engine immobilizer system and body anti-theft system is not synchronous, perform matching for engine immobilizer system in its diagnostic menu, while performing remote key matching in BCM system menu for body anti-theft system, regardless of order.
5. Remote key match ([See page 46-10](#))

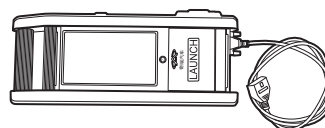
Operation

Low frequency wakeup signal from sensing antenna on door handle is sent to PEPS, low frequency certification signal is sent to remote key by PEPS after a signal is sensed to confirm if the key is legal. If legal, PEPS sends corresponding signal to body controller, then body controller controls each actuator to perform corresponding operations.

Tools

Special Tool

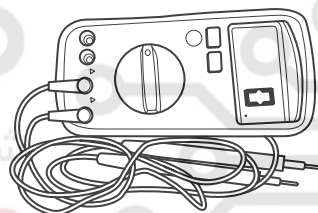
X-431 Diagnostic Tester



RCH0000001

General Tool

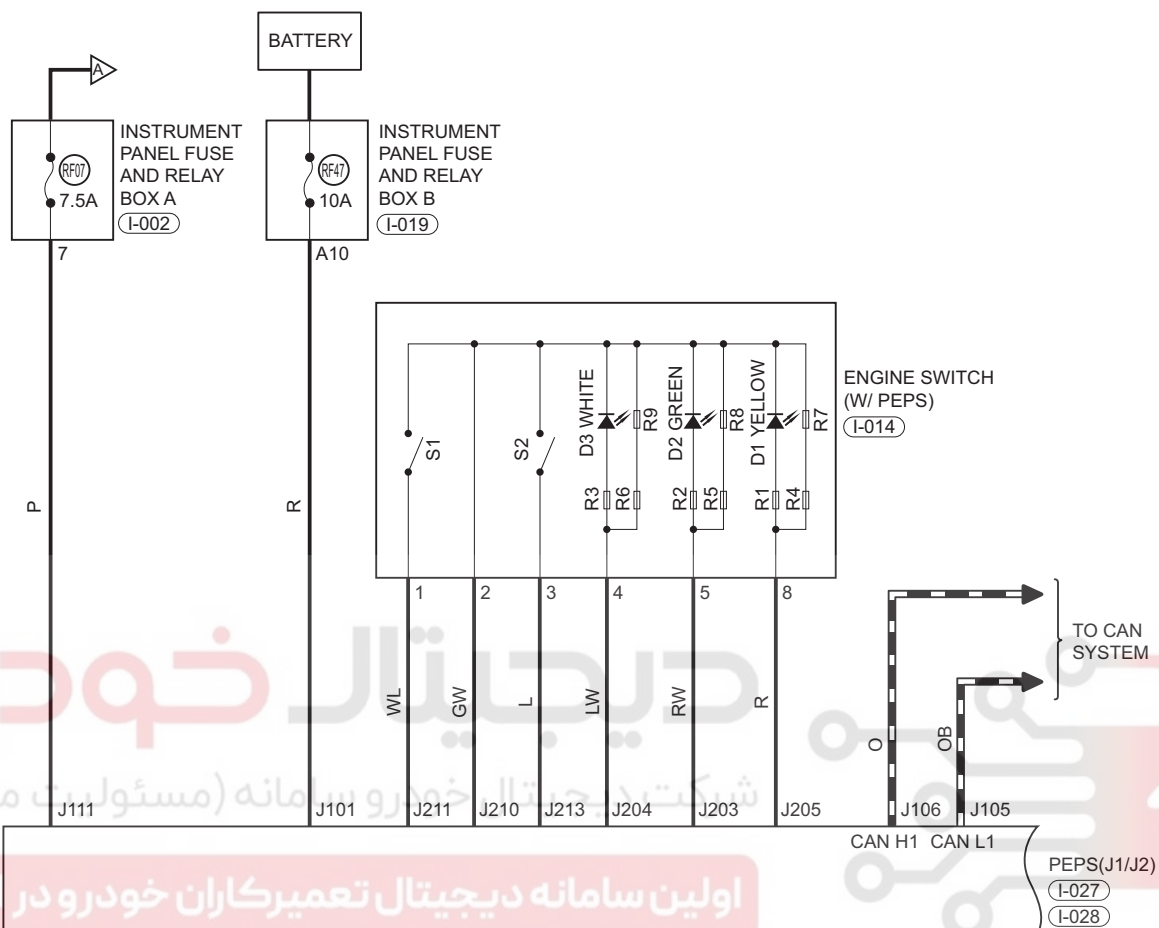
Digital Multimeter



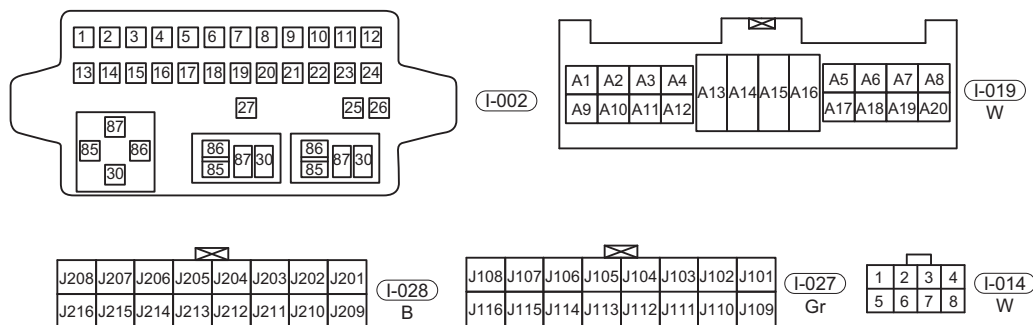
RCH0000002

PEPS System (Page 1 of 8)

FOR 2.0L CVT



46



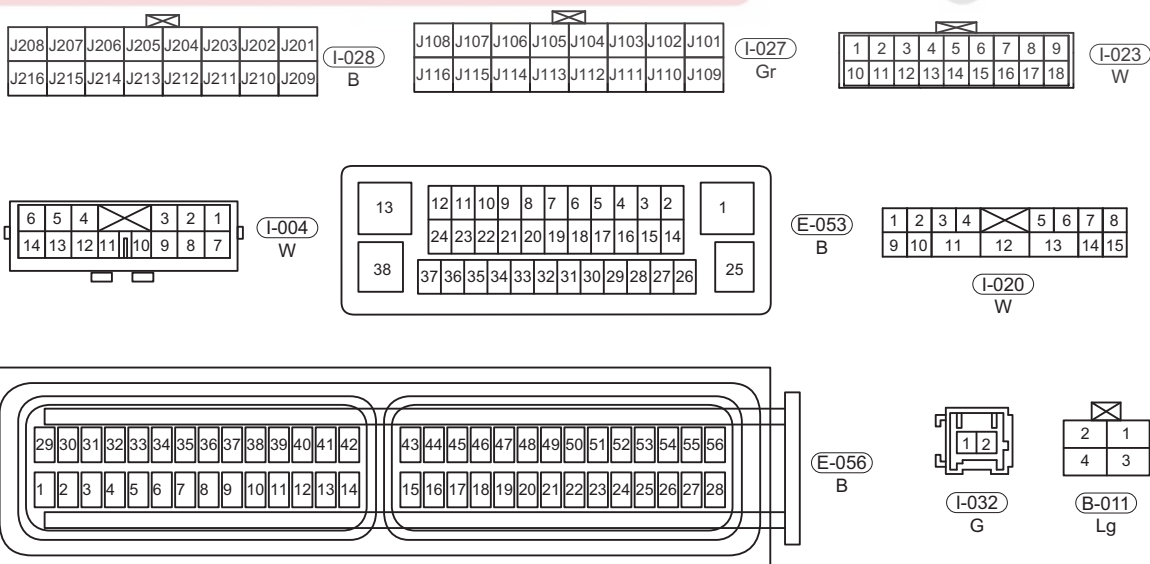
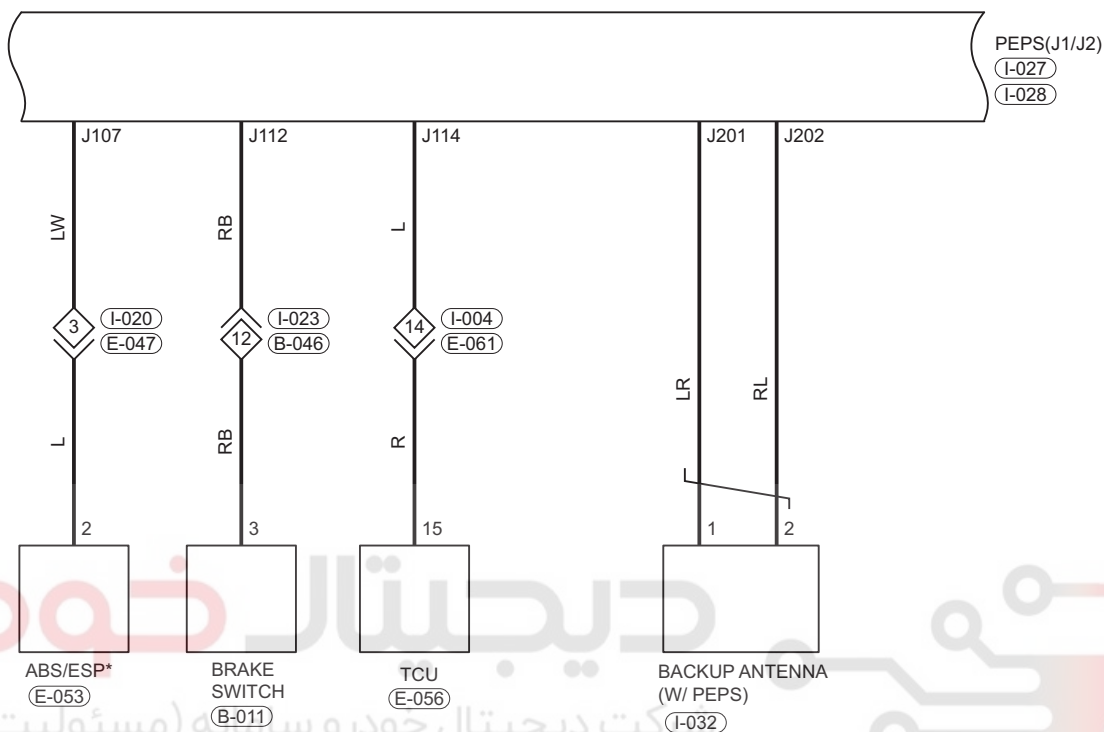
ET21460010

46



PEPS System (Page 3 of 8)

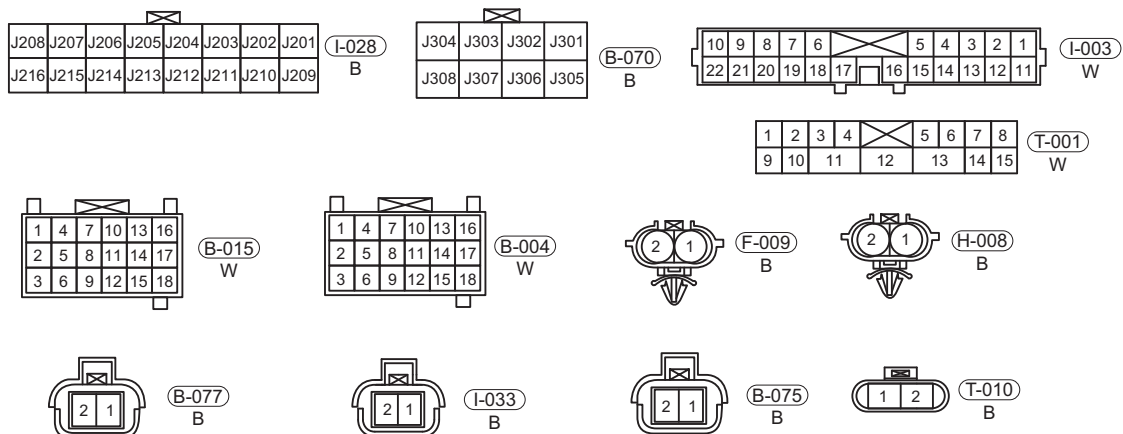
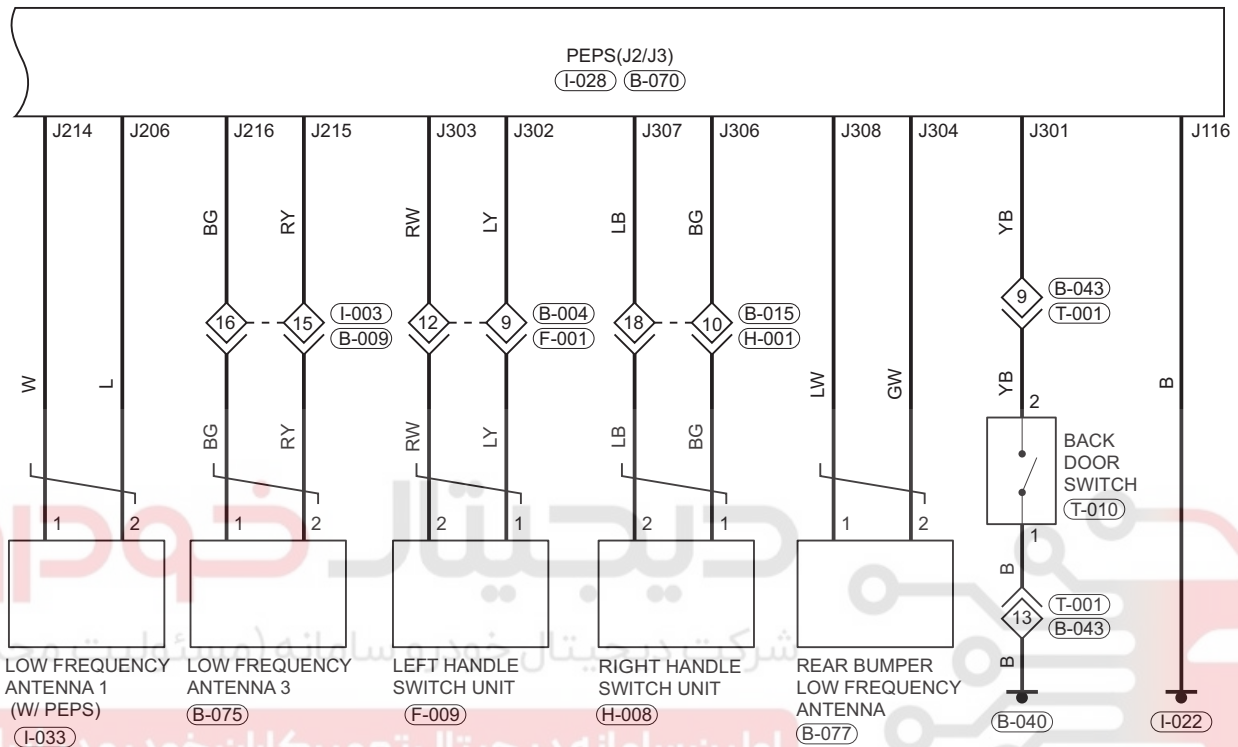
FOR 2.0L CVT



ET21460030

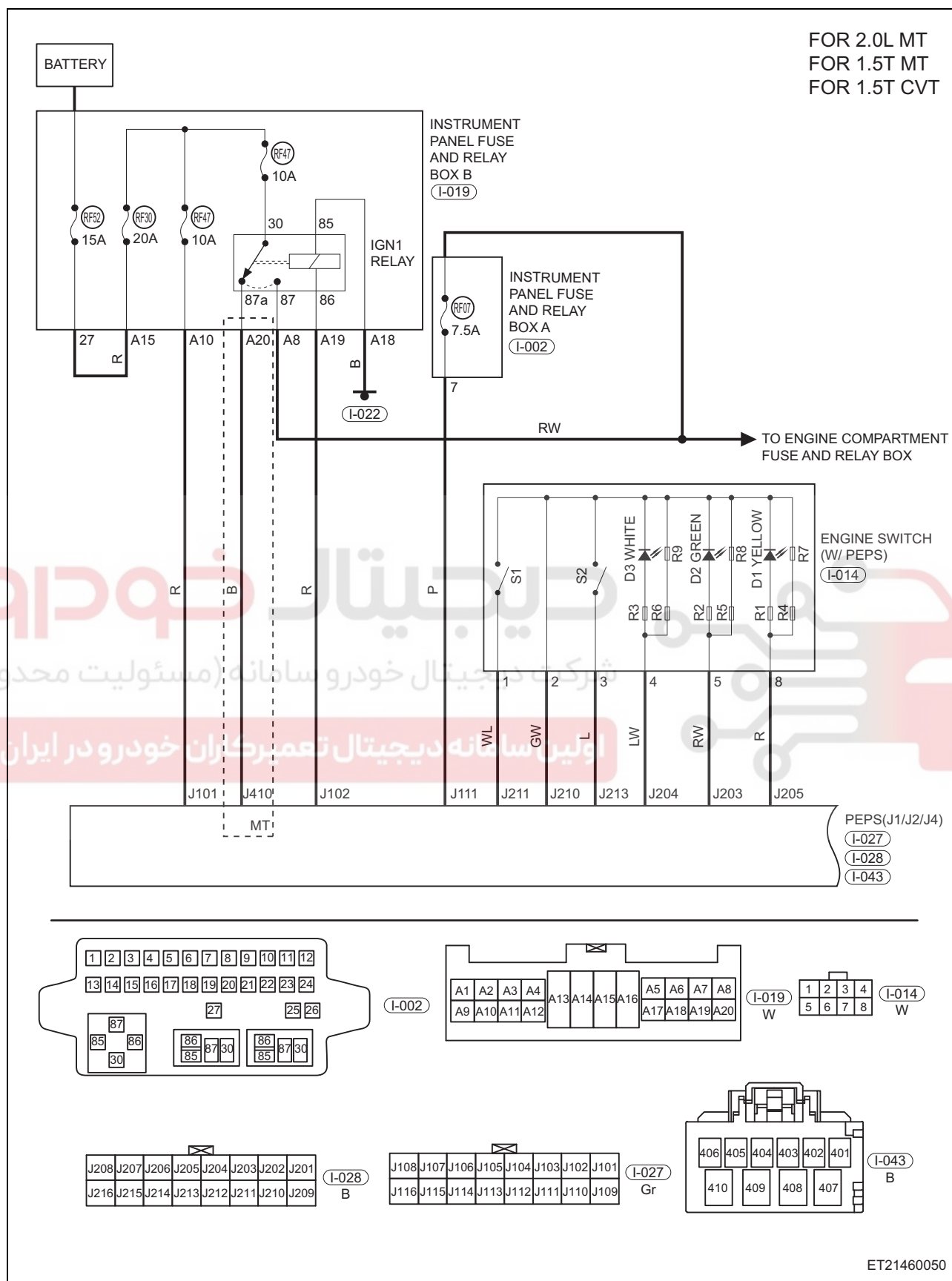
PEPS System (Page 4 of 8)

FOR 2.0L CVT



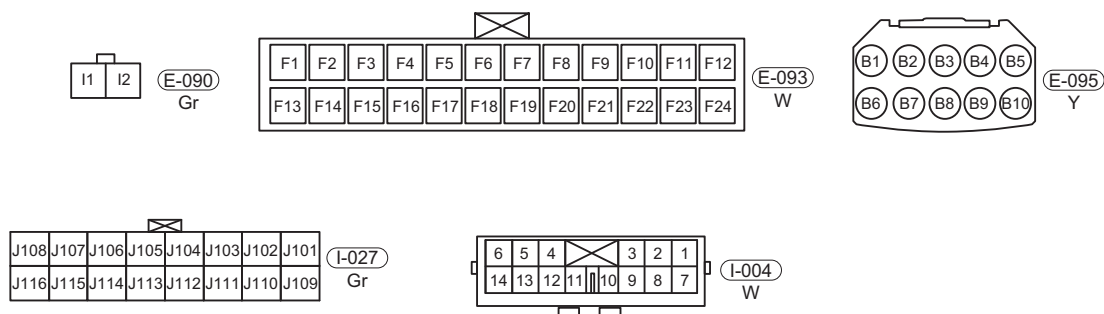
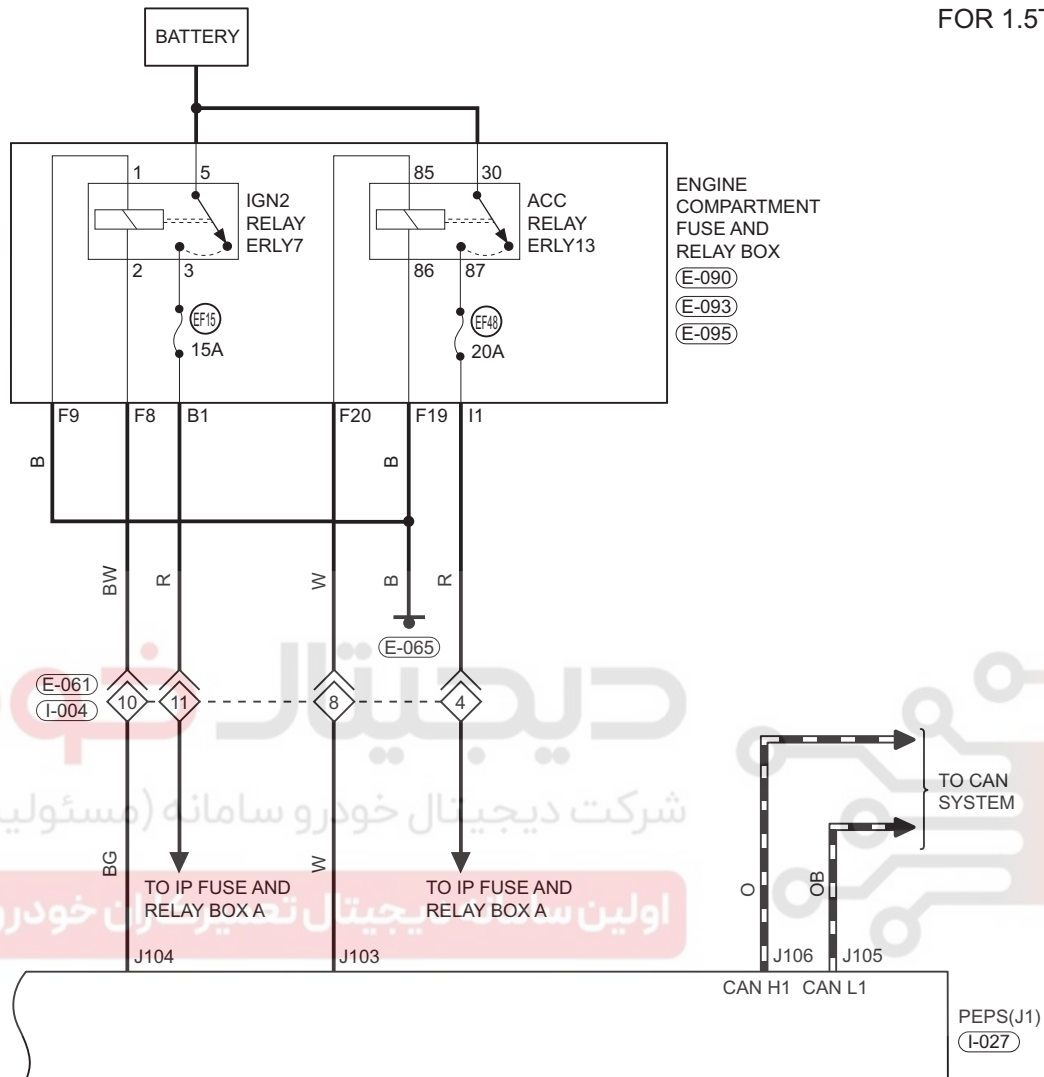
ET21460040

PEPS System (Page 5 of 8)



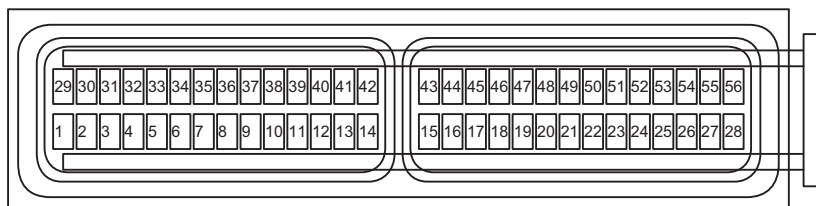
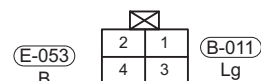
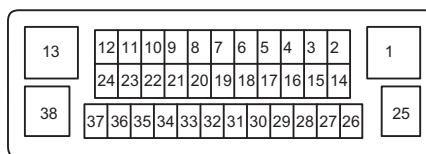
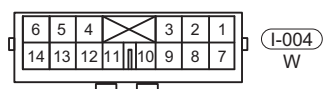
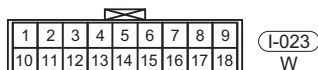
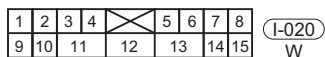
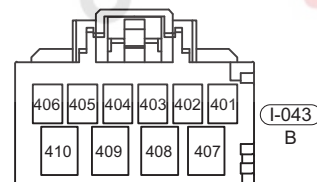
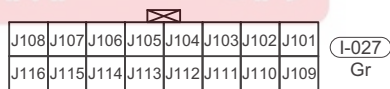
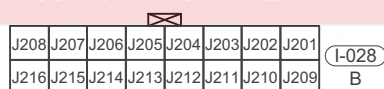
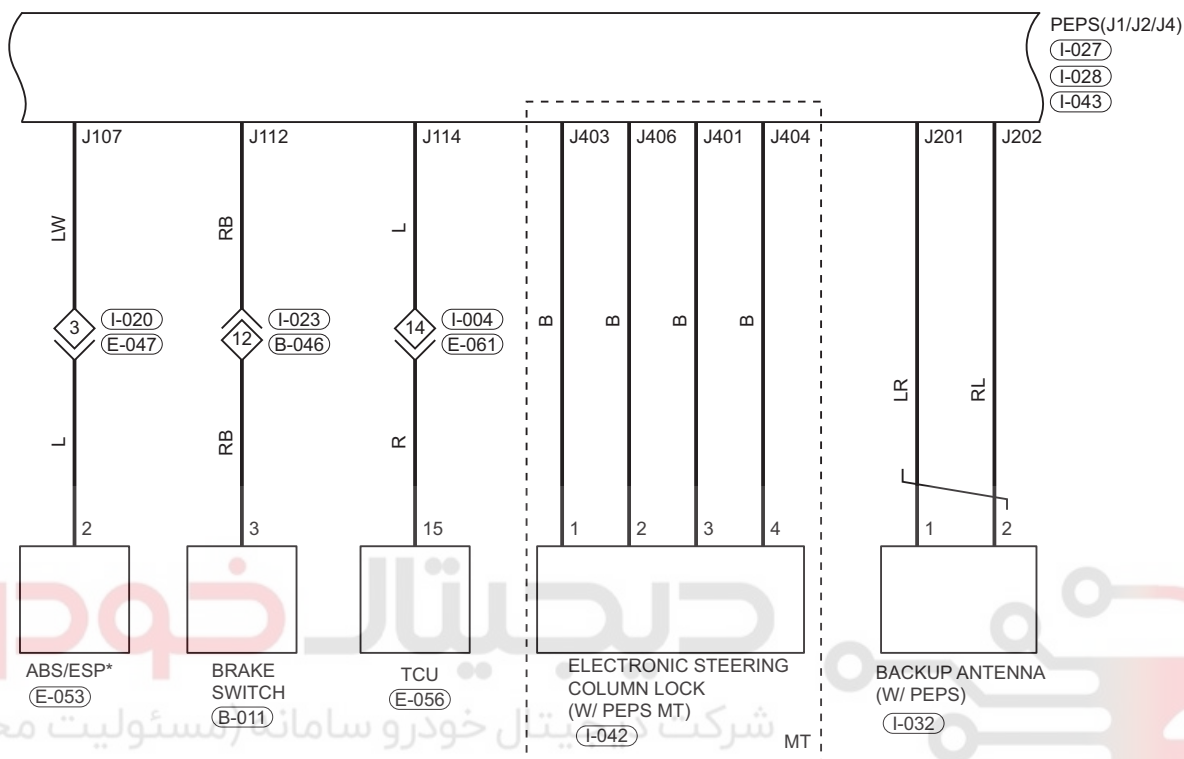
PEPS System (Page 6 of 8)

FOR 2.0L MT
FOR 1.5T MT
FOR 1.5T CVT



PEPS System (Page 7 of 8)

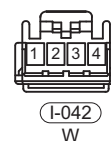
FOR 2.0L MT
FOR 1.5T MT
FOR 1.5T CVT



E-056 B



I-032 G

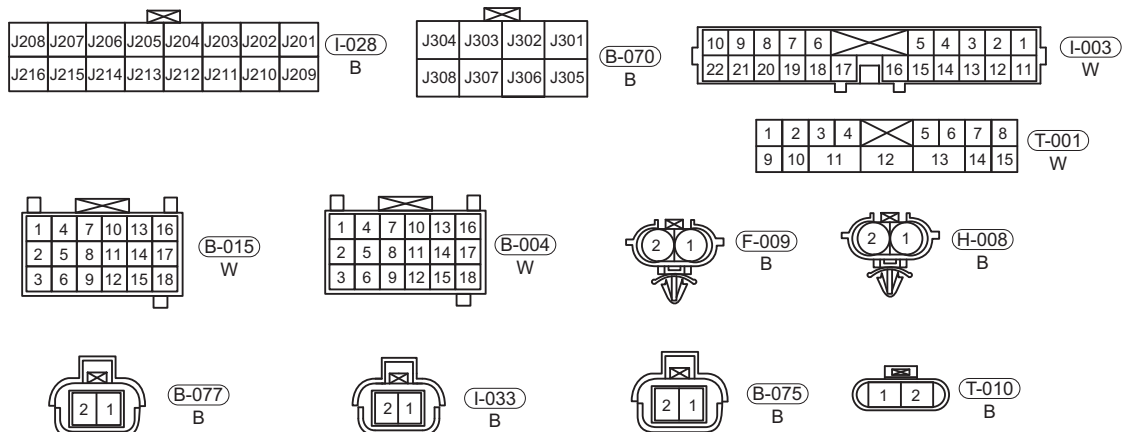
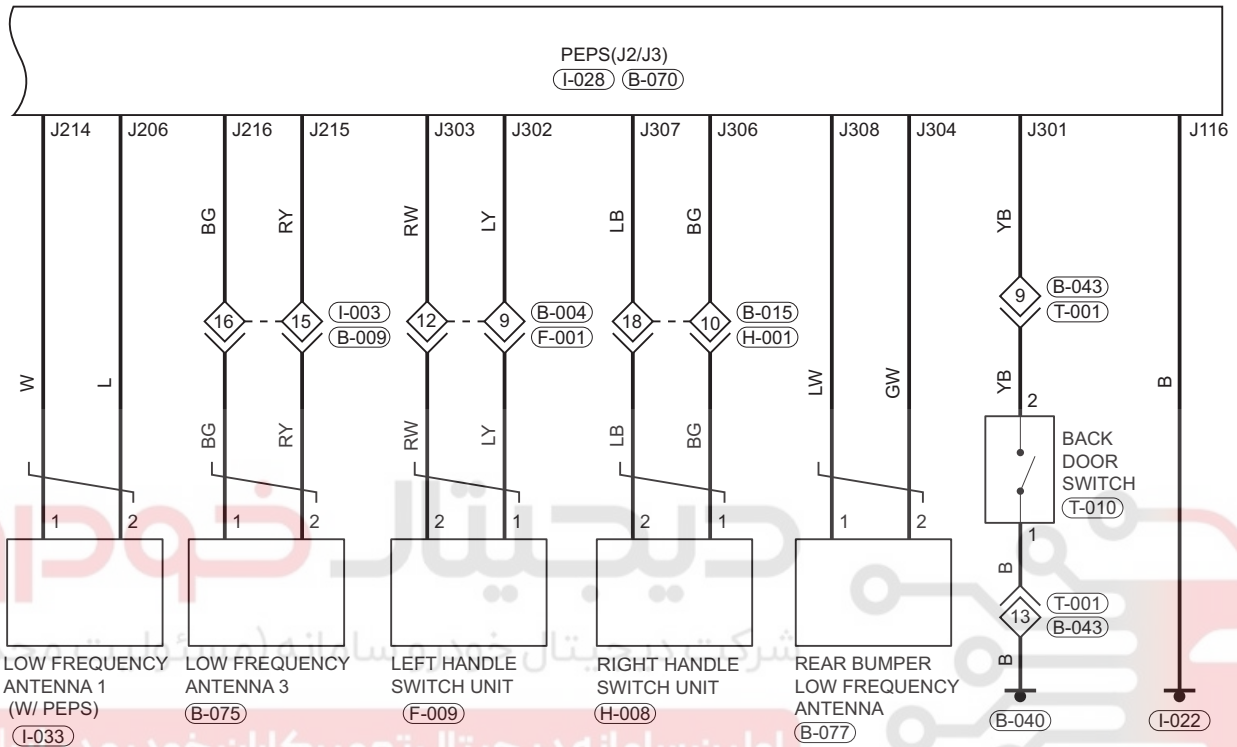


I-042 W

ET21460070

PEPS System (Page 8 of 8)

FOR 2.0L MT
FOR 1.5T MT
FOR 1.5T CVT



ET21460080

DIAGNOSIS & TESTING

Problem Symptoms Table

HINT:

Use the table below to help determine the cause of the problem. Check each suspected area in sequence. Repair or replace the faulty components, or adjust as necessary.

Engine Switch Function Failure

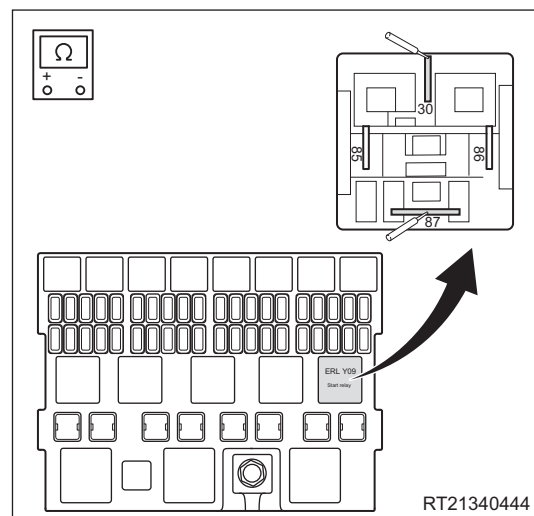
Symptom	Suspected Area	See page
Power cannot be turned on	Fuse	68-26
	ACC relay	68-34
	IGN1 relay	68-34
	IGN2 relay	68-34
	Engine switch	25-17
	Wire harness or connector	-
	Passive Entry & Passive Start (PEPS) controller	25-19
	Engine Control Module (ECM)	06-257
Engine switch indicator does not come on	Engine switch	25-17
	Wire harness or connector	-
	Passive Entry & Passive Start (PEPS) controller	25-19

Starter Failure

Symptom	Suspected Area	See page
When ignition switch is turned to START, solenoid switch makes a "clanking" sound and engine cannot start	Battery (weak battery, poor contact of battery cable)	16-7
	Starter	25-18
Starter does not run	Battery (depleted)	16-7
	Starter relay	68-26
	Ignition starting switch	25-18
	Engine switch	25-17
	Starter	25-18
	Passive Entry & Passive Start (PEPS) controller	25-19
	Wire harness or connector	-
Starter runs weakly	Battery (weak battery, internal fault)	16-7
	Starter	25-18
Starter is racing	Starter (incorrect installation, internal fault)	25-18
	Flywheel ring gear (gear teeth broken)	009-70

Starter Relay Inspection

1. Remove the starter relay from engine compartment fuse and relay box.



2. Check starter relay.
 - a. Using a digital multimeter, measure resistance according to the value(s) in the table below.

Standard Resistance

Multimeter Connection	Specified Condition
30 - 87	10 k Ω or more
30 - 87	Below 1 Ω (when battery voltage is applied to terminals 85 and 86)

If result is not as specified, replace the starter relay.

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Precautions for Starting System

1. For models with PEPS system, shift the transmission to P or N before starting and firmly depress the clutch pedal (for MT model) or brake pedal (for CVT model) until engine switch indicator illuminates in green.
2. For models without PEPS system, shift the transmission to neutral and apply parking brake before starting, and depress the clutch pedal while starting.
3. For models with PEPS system, power supply mode (LOCK, ACC, ON) is always stored in vehicle. When the battery cable is disconnected and reconnected, the power supply returns to the mode it was in before the battery cable was disconnected. Be sure to turn engine switch off before disconnecting the cable from battery terminal. Be careful if the power supply condition before the battery became depleted is not known.
4. Make sure that battery is fully charged to reduce the repeat operating time of starter.
After the battery is disconnected and reconnected, be sure to wait 10 seconds or more before engine start. The engine may not start immediately after battery is reconnected.
5. Do not start engine for more than 5 seconds each time, the repeat starting time should be not less than 10 - 15 seconds, and the consecutive starting is not allowed more than 3 times.
6. If starter cannot stop, turn off ignition switch immediately, or remove negative battery cable to find the problem.
7. Check starter circuit frequently to make sure that each wire for starting system is connected securely and in good insulation.
8. Generally, perform maintainable service for starter when servicing the vehicle. Also, the maintenance interval can be shortened or extended properly depending on actual conditions.
9. Remove the negative battery cable before removing the starter.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

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Diagnosis Procedure

HINT:

Perform troubleshooting according to the procedures below.

1 Vehicle brought to workshop

NEXT

2 Customer problem analysis check

HINT:

In troubleshooting, confirm that the problem symptoms have been accurately identified. Preconceptions should be discarded in order to make an accurate judgement. To clearly understand what the problem symptoms are, it is extremely important to ask the customer about the problem and the conditions at the time the malfunction occurred.

NEXT

3 Check battery voltage

Standard voltage: 11 to 14 V

If voltage is below 11 V, recharge or replace the battery before proceeding to next step.

NEXT

4 Read DTCs

DTC occurs

go to step 5

No DTC

go to step 7

5 Record DTCs, and clear DTCs

NEXT

6 Verify and duplicate problem: simulate problem occurring condition, and read DTCs again

DTC occurs

For current DTC, go to step 8

No DTC

For history DTC, go to step 9

7

Problem repair (no DTC), then go to step 10

NEXT

8

Troubleshoot according to Diagnostic Trouble Code (DTC) chart, then go to step 10

NEXT

9

Troubleshoot according to Problem Symptoms Table, then go to step 10

NEXT

10

Confirm problem is repaired, and perform repair completion inspection

NEXT

11

End

شرکت دیجیتال خودرو (مسئولیت محدود)

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Problem Repair (No DTC)

If PEPS system has problems, but no DTC is stored in PEPS system, this problem is called a problem without DTC.

Symptom	Suspected Area
Instrument cluster indicator does not come on or remains on	Instrument cluster indicator (broken)
	Wire harness (incorrectly connected)

Troubleshooting recommendation: check corresponding components according to problem symptom, and troubleshoot following the vehicle repair manual.

Diagnostic Help

1. Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module by the data network.
2. Confirm that malfunction is current, and carry out diagnostic test and repair procedures.
3. If DTC cannot be deleted, the malfunction is current.
4. Visually check the related wire harness and connector.
5. Check and clean all wire harness connectors and grounds related to current DTC.
6. If multiple trouble codes were set, refer to the circuit diagrams to look for any common ground circuit or power supply circuit applied to the DTC.
7. Refer to any Technical Bulletin that may apply to the malfunction.

Intermittent DTC Troubleshooting

If malfunction is intermittent, perform the followings:

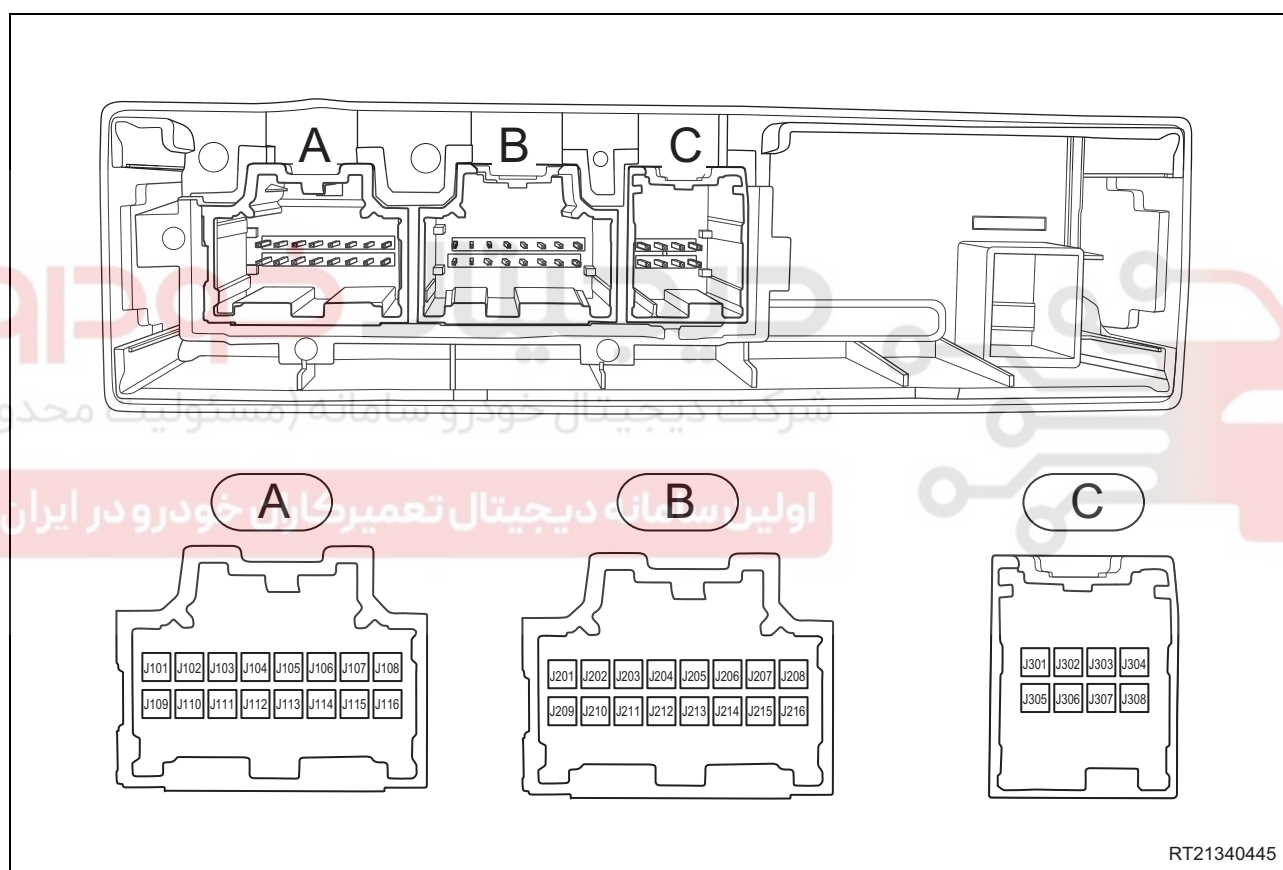
- Check if connectors are loose.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Wiggle related wire harnesses and connectors and observe if signal is interrupted in the related circuit.
- If possible, try to duplicate the conditions under which the DTC was set.
- Look for the data that has changed or the DTC to be reset during the wiggle test.
- Look for broken, bent, protruded or corroded terminals.
- Check and clean all wire harness connectors and grounding parts related to the current DTC.
- Remove the PEPS controller from the malfunctioning vehicle and install it to a new vehicle and perform a test. If DTC cannot be cleared, the PEPS controller is malfunctioning. If DTC can be cleared, reinstall the PEPS controller to original vehicle.
- If multiple trouble codes were set, refer to the circuit diagrams to look for any common ground circuit or power supply circuit applied to the DTC.
- Refer to Technical Bulletin that is applied to the malfunction.

Ground Inspection

Groundings are very important to entire circuit system, which are normal or not can seriously affect the entire circuit system. Ground points are often exposed to moisture, dirt and other corrosive environments. Corrosion (rust) and oxidation may increase load resistance. This situation will seriously affect the normal operation of the circuit. The operations to check the ground points are as follows:

1. Remove the ground bolt or nut.
2. Check all contact surfaces for tarnish, dirt and rust, etc.
3. Clean as necessary to ensure that contacting is in a good condition.
4. Reinstall the ground bolt or nut securely.
5. Check if add-on accessories interfere with the ground circuit.
6. If several wire harnesses are crimped into one ground terminal, check if they are installed correctly. Make sure all wire harnesses are clean, securely fastened and providing a good ground path.

Passive Entry & Passive Start (PEPS) Controller Terminal List



Connector J1 Terminal Definition

Terminal No.	Terminal Definition	Terminal No.	Terminal Definition
J101	Battery Power Supply	J109	-
J102	IG1 Relay Drive (High)	J110	Starter Relay Inspection
J103	ACC Relay Drive (High)	J111	Ignition Signal
J104	IG2 Relay Drive (High)	J112	Brake Switch Signal
J105	CAN-L	J113	Starter Relay (High)
J106	CAN-H	J114	Gear Position Signal

Terminal No.	Terminal Definition	Terminal No.	Terminal Definition
J107	Hard Wire Speed Signal	J115	-
J108	-	J116	GND

Connector J2 Terminal Definition

Terminal No.	Terminal Definition	Terminal No.	Terminal Definition
J201	Immobilizer Coil Positive	J209	-
J202	Immobilizer Coil Negative	J210	Engine Switch Ground
J203	Engine Switch Indicator (Green)	J211	Engine Switch 1
J204	Engine Switch Backlight (White)	J212	-
J205	Engine Switch Indicator (Amber)	J213	Engine Switch 2
J206	Low Frequency Antenna 1 Negative	J214	Low Frequency Antenna 1 Positive
J207	Low Frequency Antenna 2 Negative	J215	Low Frequency Antenna 3 Negative
J208	Low Frequency Antenna 2 Positive	J216	Low Frequency Antenna 3 Positive

Connector J3 Terminal Definition

Terminal No.	Terminal Definition	Terminal No.	Terminal Definition
J301	Back Door Unlock Signal	J305	-
J302	Front Left Door Handle Sensor (Low Frequency Antenna) Negative	J306	Front Right Door Handle Sensor (Low Frequency Antenna) Negative
J303	Front Left Door Handle Sensor (Low Frequency Antenna) Positive	J307	Front Right Door Handle Sensor (Low Frequency Antenna) Positive
J304	Back Door Low Frequency Antenna Negative	J308	Back Door Low Frequency Antenna Positive

J4-1	Electric Steering Column Lock Module Control Ground (for MT)
J4-2	-
J4-3	Electric Steering Column Lock Ground (for MT)
J4-4	Electric Steering Column Lock Control Line (for MT)
J4-5	-
J4-6	Electric Steering Column Lock Power Supply (for MT)
J4-7	-
J4-8	Ground (for MT)
J4-9	-
J4-10	Power Supply (for MT)

Diagnostic Trouble Code (DTC) Chart

DTC Code	DTC Definition
B1500 13	Driver Door Outside LF Antenna Circuit Open
B1501 13	Passenger Door Outside LF Antenna Circuit Open
B1502 13	Front Internal LF Antenna Circuit Open
B1504 13	Rear Internal LF Antenna Circuit Open
B1505 13	Bumper LF Antenna Circuit Open
B1506 00	Abnormality ON Switches of Engine Switch No Subtype Information
B1507 00	Abnormality in IG Circuit No Subtype Information
B1508 00	Abnormality in ACC Circuit No Subtype Information
B1509 00	Abnormality in Brake Signal No Subtype Information
B150A 00	Abnormality in Vehicle Speed Signal No Subtype Information
B150C 00	Clutch Switch Signal Error No Subtype Information
B150D 00	Abnormality on ESCL LCK_GND No Subtype Information
B150E 00	Abnormality on ESCL LCK_PS No Subtype Information
B150F 00	ESCL Anti-scanning No Subtype Information
B1510 00	Abnormality on Wheel Speed Signal No Subtype Information
B1511 00	Abnormality in ESCL Lock No Subtype Information
B1512 00	Abnormality in ESCL Unlock No Subtype Information
B1513 00	ESCL External Failure No Subtype Information
B1514 00	Abnormality on STAR Power Supply No Subtype Information
B1515 45	ROM for Checksum Failure
B1516 19	HSU Overload
B1517 23	HSU Switch Continuously Pressed Failure
U0073 88	Control Module Communication Bus Off
U0100 87	Lost Communication with EMS Missing Message
U0101 87	Lost Communication with TCM Missing Message
U0129 87	Lost Communication with BSM Missing Message
U0140 87	Lost Communication with BCM Missing Message
U0329 87	Lost Communication with ESCL Missing Message
U1300 55	Software Configuration Error Not Configured

DTC	B1500 13	Driver Door Outside LF Antenna Circuit Open
DTC	B1501 13	Passenger Door Outside LF Antenna Circuit Open
DTC	B1516 19	HSU Overload
DTC	B1517 23	HSU Switch Continuously Pressed Failure

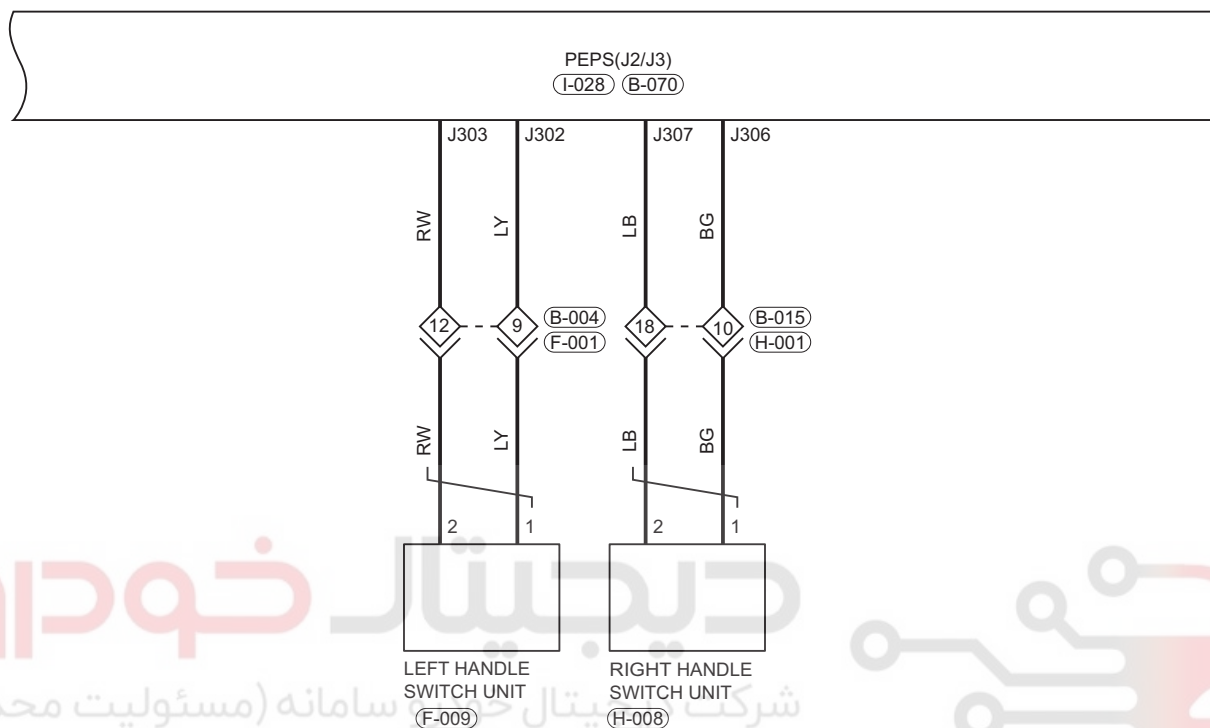
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46

J208	J207	J206	J205	J204	J203	J202	J201	I-028
J216	J215	J214	J213	J212	J211	J210	J209	B

J304	J303	J302	J301	B-070
J308	J307	J306	J305	B

1	4	7	10	13	16	B-004
2	5	8	11	14	17	W
3	6	9	12	15	18	



ET21460510

DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B1500 13	Driver Door Outside LF Antenna Circuit Open	Engine switch ON	- Wire harness or connector damaged - Outside low frequency antenna on driver side - Outside low frequency antenna on passenger side - Passive Entry & Passive Start (PEPS) controller
B1501 13	Passenger Door Outside LF Antenna Circuit Open		
B1516 19	HSU Overload		
B1517 23	HSU Switch Continuously Pressed Failure		

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch ON.
- Use X-431 3G diagnostic tester to record and clear the DTCs stored in the PEPS system.
- Turn ignition switch to LOCK and wait for a few seconds.
- Use X-431 3G diagnostic tester to select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent (See page 46-25).

Diagnosis Procedure**1****Check wire harness and connector**

- Turn off all the electrical equipment and ignition switch.
- Disconnect the negative battery cable.
- Disconnect the left handle sensor F-009 and right handle sensor H-008.
- Disconnect the PEPS controller connector B-070.
- Disconnect the front left door wire harness connector F-001 and body wire harness connector B-004.
- Disconnect the front right door wire harness connector H-002 and body wire harness connector B-015.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check that the related connector pins are in good condition.

NG

Repair or replace related wire harness and connector

OK

2**Check body wire harness and connector**

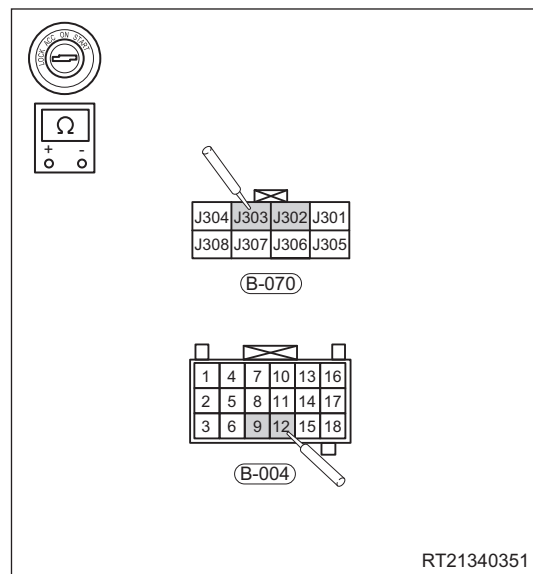
- a. Check the body wire harness and connector (outside low frequency antenna on driver side).

Check for Open

Multimeter Connection	Condition	Specified Condition
B-070 (J303) - B-004 (12)	Always	Continuity
B-070 (J302) - B-004 (9)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
B-070 (J303) or B-004 (12) - Body ground	Always	No continuity
B-070 (J302) or B-040 (9) - Body ground	Always	No continuity
B-070 (J303) or B-004 (12) - Battery positive	Always	No continuity
B-070 (J302) or B-004 (9) - Battery positive	Always	No continuity



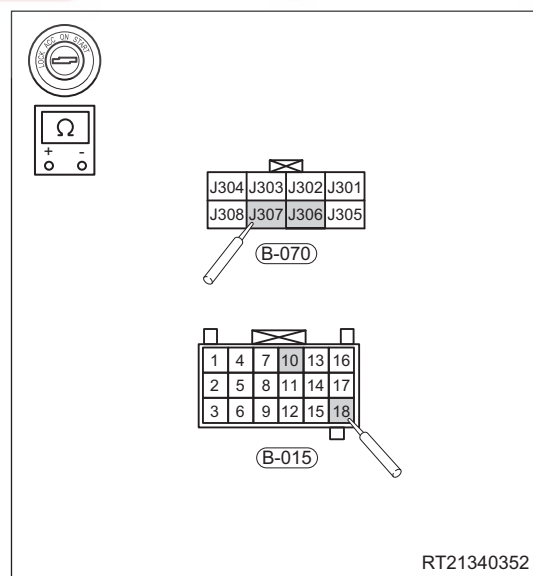
- b. Check the body wire harness and connector (outside low frequency antenna on passenger side)

Check for Open

Multimeter Connection	Condition	Specified Condition
B-070 (J307) - B-015 (18)	Always	Continuity
B-070 (J306) - B-015 (10)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
B-070 (J307) or B-015 (18) - Body ground	Always	No continuity
B-070 (J306) or B-015 (10) - Body ground	Always	No continuity



Multimeter Connection	Condition	Specified Condition
B-070 (J307) or B-015 (18) - Battery positive	Always	No continuity
B-070 (J306) or B-015 (10) - Battery positive	Always	No continuity

NG

Repair or replace body wire harness and connector

OK

3 Check front left door wire harness and connector

Check for Open

Multimeter Connection	Condition	Specified Condition
F-001 (12) - F-009 (2)	Always	Continuity
F-001 (9) - F-009 (1)	Always	Continuity

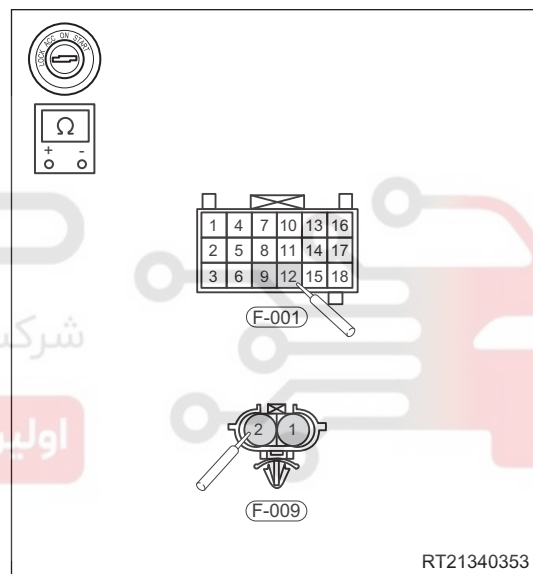
Check for Short

Multimeter Connection	Condition	Specified Condition
F-001 (12) or F-009 (2) - Body ground	Always	No continuity
F-001 (9) or F-009 (1) - Body ground	Always	No continuity
F-001 (12) or F-009 (2) - Battery positive	Always	No continuity
F-001 (9) or F-009 (1) - Battery positive	Always	No continuity

NG

Repair or replace front left door wire harness and connector

OK

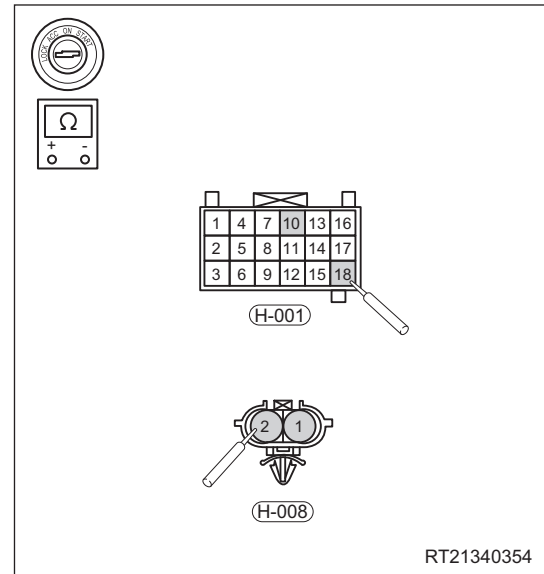


4 Check front right door wire harness and connector**Check for Open**

Multimeter Connection	Condition	Specified Condition
H-001 (18) - H-008 (2)	Always	Continuity
H-001 (10) - H-008 (1)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
H-001 (18) or H-008 (2) - Body ground	Always	No continuity
H-001 (10) or H-008 (1) - Body ground	Always	No continuity
H-001 (18) or H-008 (2) - Battery positive	Always	No continuity
H-001 (10) or H-008 (1) - Battery positive	Always	No continuity

**NG****Repair or replace front right door wire harness and connector****OK****5 Confirm DTCs****46**

- Connect related wire harness connectors.
- Connect the negative battery cable.
- Turn ignition switch ON.
- Connect X-431 3G diagnostic tester to Data Link Connector (DLC) to check if any DTC is detected.

OK**System operates normally****NG****6 Reconfirm DTCs after replacing front door handle sensor (built-in low frequency antenna)**

- Remove the front left door handle sensor (built-in low frequency antenna) (See page 50-56).
- Remove the front right door handle sensor (built-in low frequency antenna).
- Replace front left/right door handle sensors (built-in low frequency antenna) with new ones.

d. Connect X-431 3G diagnostic tester to Data Link Connector (DLC) again to check if any DTC is detected.

NG

Repair or replace PEPS controller

OK

System operates normally

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DTC	B1502 13	Front Internal LF Antenna Circuit Open
DTC	B1504 13	Rear Internal LF Antenna Circuit Open

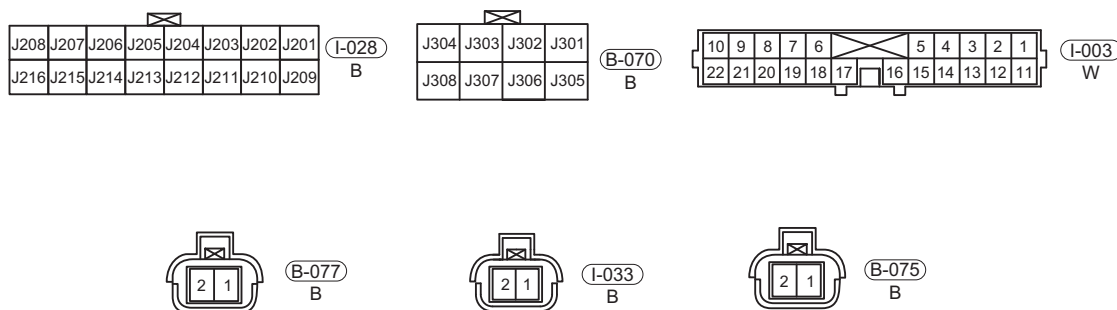
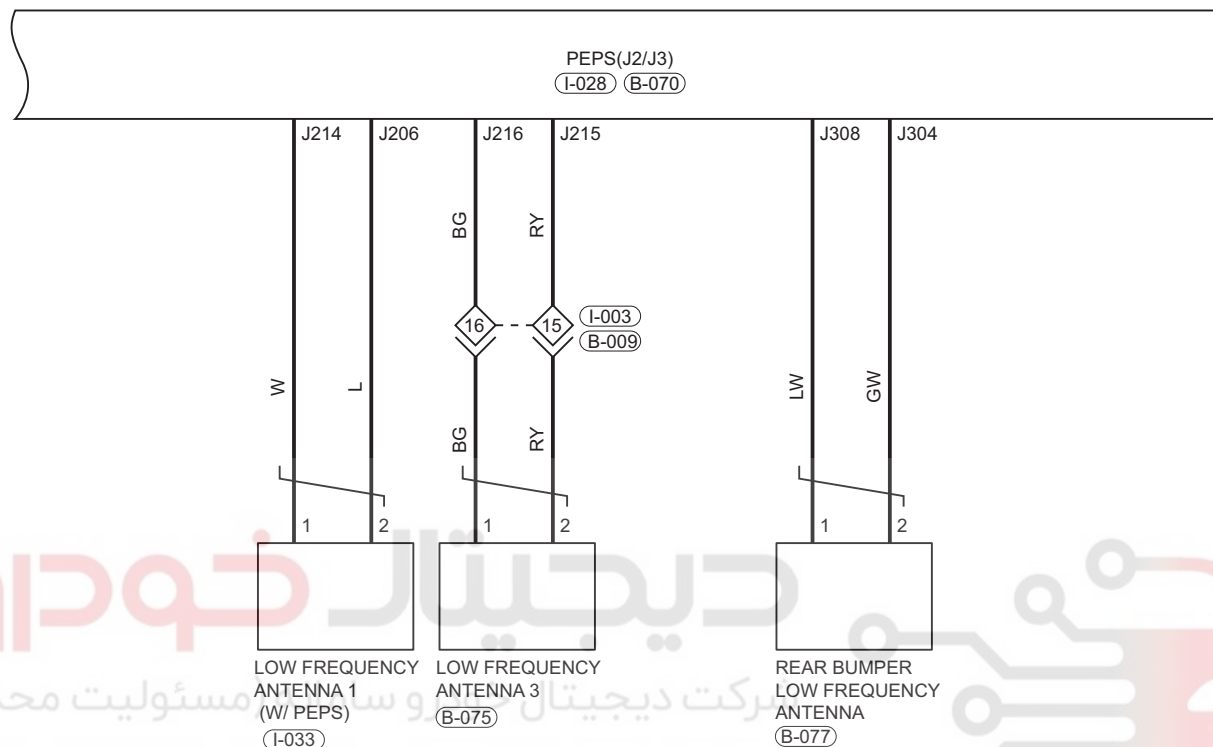
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ET21460520

46 - PEPS SYSTEM

DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B1502 13	Front Internal LF Antenna Circuit Open	Engine switch ON	• Wire harness or connector damaged • Front internal low frequency antenna • Middle internal low frequency antenna • Rear internal low frequency antenna • Passive Entry & Passive Start (PEPS) controller
B1504 13	Rear Internal LF Antenna Circuit Open		

 CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch ON.
- Use X-431 3G diagnostic tester to record and clear the DTCs stored in the PEPS system.
- Turn ignition switch to LOCK and wait for a few seconds.
- Use X-431 3G diagnostic tester to select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent ([See page 46-25](#)).

Diagnosis Procedure**1 Check wire harness and connector**

- Turn off all the electrical equipment and ignition switch.
- Disconnect the negative battery cable.
- Disconnect the PEPS controller connector I-028.
- Disconnect the front internal low frequency antenna connector I-033, rear internal low frequency antenna connector B-075.
- Disconnect instrument panel connector i-003 and body wire harness B-009.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check that the related connector pins are in good condition.

NG

Repair or replace related wire harness and connector

OK

2**Check instrument panel wire harness and connector**

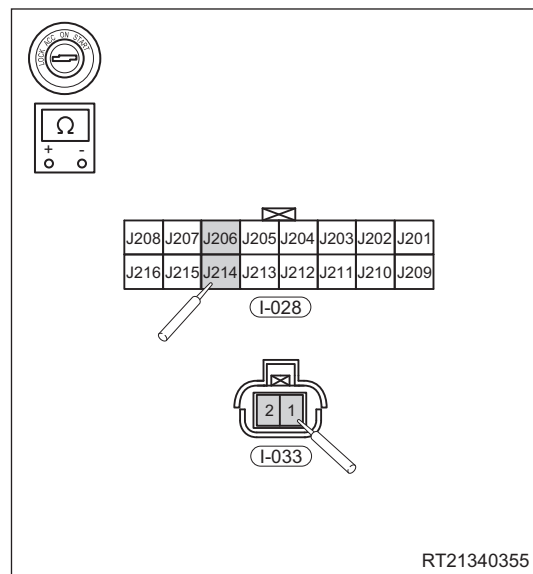
- a. Check the instrument panel wire harness and connector (front internal low frequency antenna).

Check for Open

Multimeter Connection	Condition	Specified Condition
I-028 (J214) - I-033 (1)	Always	Continuity
I-028 (J206) - I-033 (2)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
I-028 (J214) or I-033 (1) - Body ground	Always	No continuity
I-028 (J206) or I-033 (2) - Body ground	Always	No continuity
I-028 (J214) or I-033 (1) - Battery positive	Always	No continuity
I-028 (J206) or I-033 (2) - Battery positive	Always	No continuity



46 - PEPS SYSTEM

- b. Check the instrument panel wire harness and connector (rear internal low frequency antenna).

Check for Open

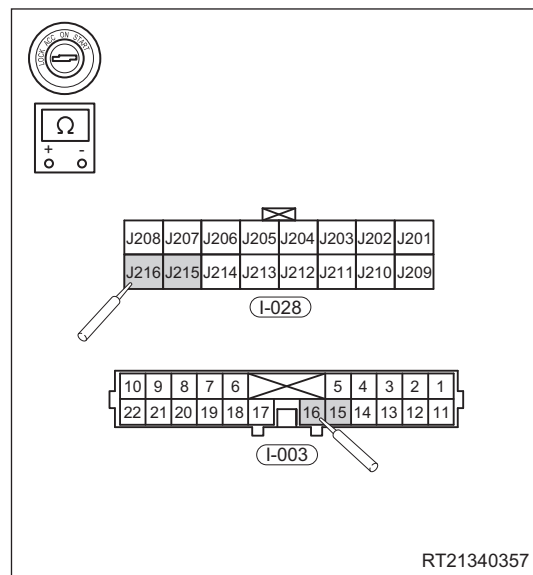
Multimeter Connection	Condition	Specified Condition
I-028 (J216) - I-003 (16)	Always	Continuity
I-028 (J215) - I-003 (15)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
I-028 (J216) or I-003 (16) - Body ground	Always	No continuity
I-028 (J215) or I-003 (15) - Body ground	Always	No continuity
I-028 (J216) or I-003 (16) - Battery positive	Always	No continuity
I-028 (J215) or I-003 (15) - Battery positive	Always	No continuity

NG

Repair or replace instrument panel wire harness and connector

OK

3 Check body wire harness and connector

- a. Check the body wire harness and connector.

Check for Open

Multimeter Connection	Condition	Specified Condition
B-009 (16) - B-075 (1)	Always	Continuity
B-009 (15) - B-075 (2)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
B-009 (16) or B-075 (1) - Body ground	Always	No continuity
B-009 (15) or B-075 (2) - Body ground	Always	No continuity
B-009 (16) or B-075 (1) - Battery positive	Always	No continuity
B-009 (15) or B-075 (2) - Battery positive	Always	No continuity

NG

Repair or replace body wire harness and connector

OK

4 Confirm DTCs

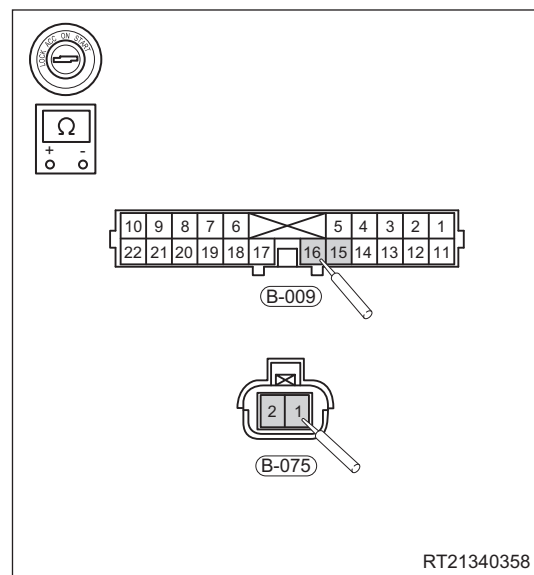
46

- Connect related wire harness connectors.
- Connect the negative battery cable.
- Turn ignition switch ON.
- Connect X-431 3G diagnostic tester to Data Link Connector (DLC) to check if any DTC is detected.

OK

System operates normally

NG



46 - PEPS SYSTEM

5**Replace low frequency antenna**

- a. Remove the low frequency antenna ([See page 50-54](#)).
- b. Install new low frequency antenna.
- c. Connect X-431 3G diagnostic tester to Data Link Connector (DLC) again to check if any DTC is detected.

NG**Repair or replace PEPS controller****OK****System operates normally**

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DTC	B1506 00	Abnormality ON Switches of Engine Switch No Subtype Information
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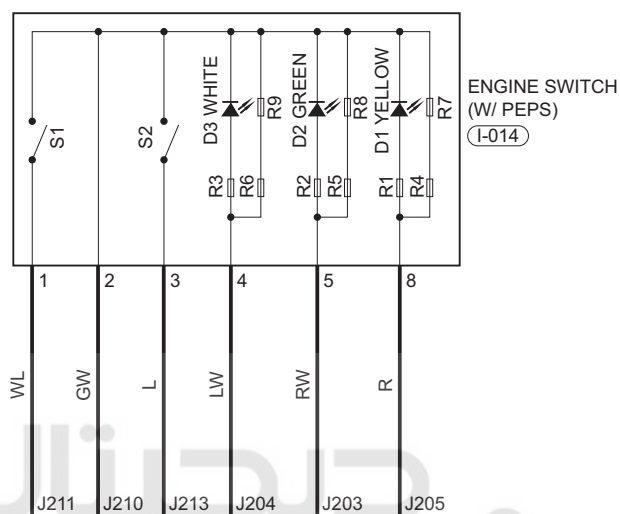
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FOR 2.0L MT
FOR 1.5T MT
FOR 1.5T CVT

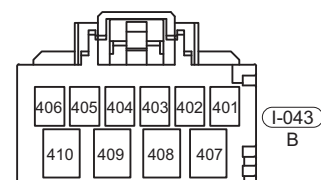
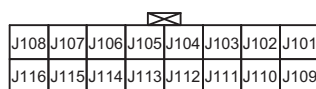
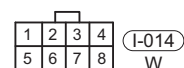


PEPS(J1/J2/J4)

I-027

I-028

I-043



DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B1506 00	Abnormality ON Switches of Engine Switch No Subtype Information	Engine switch ON	- Wire harness or connector damaged - Engine switch - Passive Entry & Passive Start (PEPS) controller

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch ON.
- Use X-431 3G diagnostic tester to record and clear the DTCs stored in the PEPS system.
- Turn ignition switch to LOCK and wait for a few seconds.
- Use X-431 3G diagnostic tester to select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent (See page 46-25).

Diagnosis Procedure**1 Check wire harness and connector**

- Turn off all the electrical equipment and ignition switch.
- Disconnect the negative battery cable.
- Disconnect the PEPS controller connector I-028.
- Disconnect the engine switch connector I-014.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check that the related connector pins are in good condition.

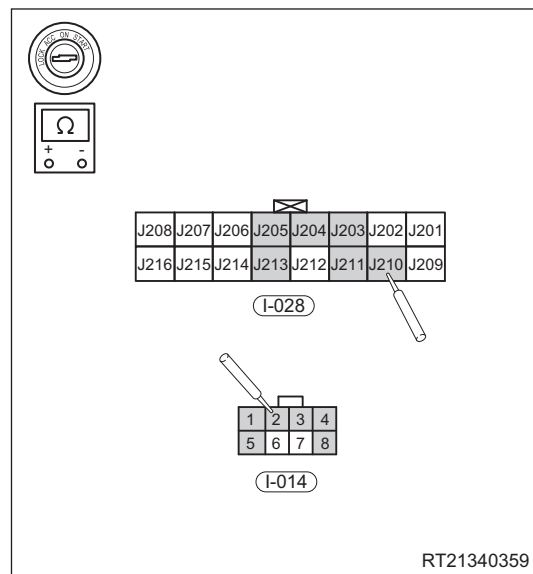
NG

Repair or replace related wire harness and connector

OK

2**Check instrument panel wire harness and connector****Check for Open**

Multimeter Connection	Condition	Specified Condition
I-028 (J211) - I-014 (1)	Always	Continuity
I-028 (J210) - I-014 (2)	Always	Continuity
I-028 (J213) - I-014 (3)	Always	Continuity
I-028 (J204) - I-014 (4)	Always	Continuity
I-028 (J203) - I-014 (5)	Always	Continuity
I-028 (J205) - I-014 (8)	Always	Continuity

**Check for Short**

Multimeter Connection	Condition	Specified Condition
I-028 (J211) or I-014 (1) - Body ground/Battery positive	Always	No continuity
I-028 (J210) or I-014 (2) - Body ground/Battery positive	Always	No continuity
I-028 (J213) or I-014 (3) - Body ground/Battery positive	Always	No continuity
I-028 (J204) or I-014 (4) - Body ground/Battery positive	Always	No continuity
I-028 (J203) or I-014 (5) - Body ground/Battery positive	Always	No continuity
I-028 (J205) or I-014 (8) - Body ground/Battery positive	Always	No continuity

NG**Repair or replace instrument panel wire harness and connector**

OK

3 Check engine switch

- a. Remove the engine switch (See page 25-17).
- b. Check the engine switch (See page 25-24).

NG

Repair or replace engine switch

OK

4 Confirm DTCs

- a. Connect related wire harness connectors.
- b. Connect the negative battery cable.
- c. Turn ignition switch ON.
- d. Connect X-431 3G diagnostic tester to Data Link Connector (DLC) to check if any DTC is detected.

NG

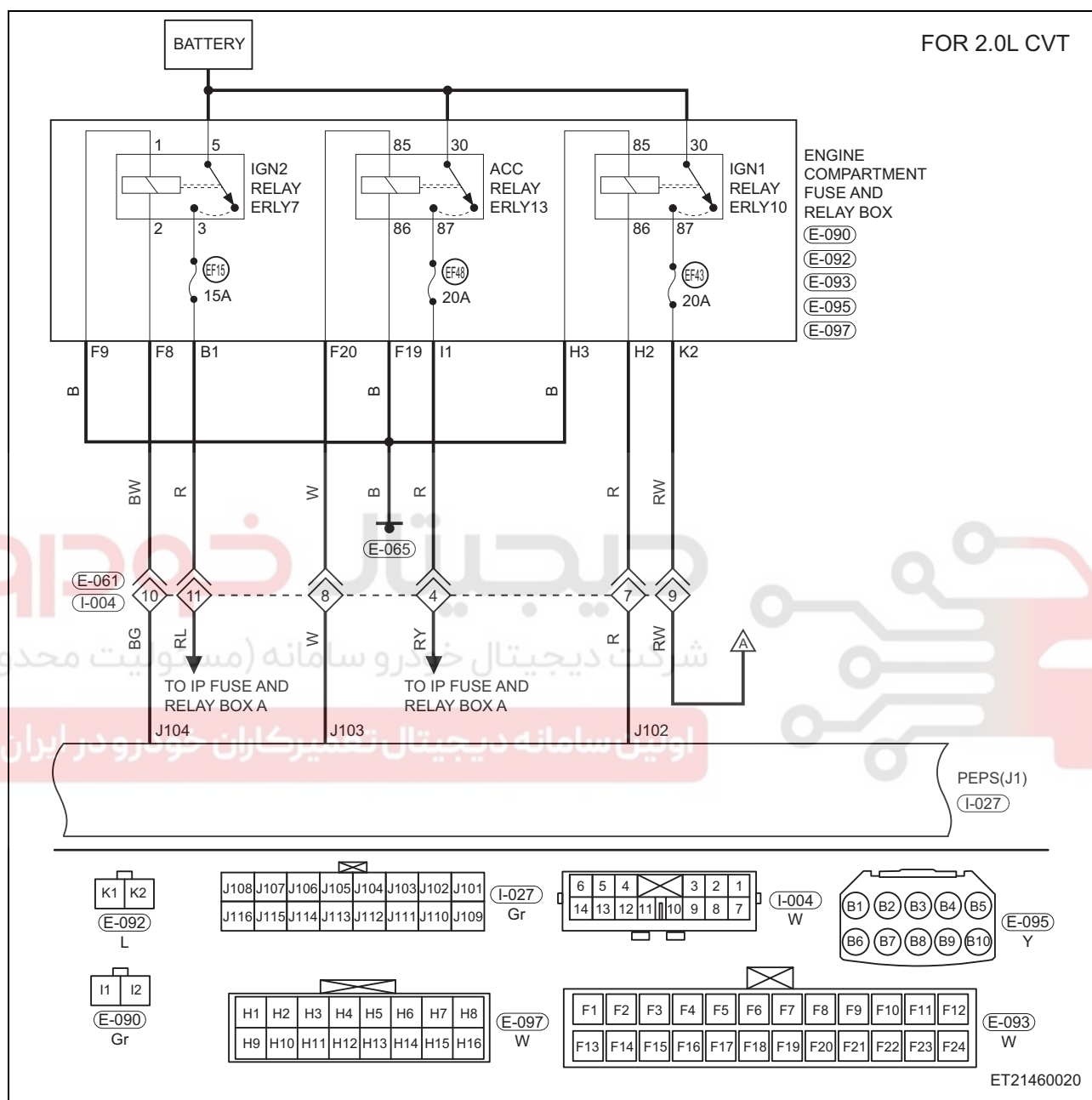
Repair or replace PEPS controller

OK

System operates normally

DTC	B1507 00	Abnormality in IG Circuit No Subtype Information
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DTC	B1508 00	Abnormality in ACC Circuit No Subtype Information
-----	----------	---



DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B1507 00	Abnormality in IG Circuit No Subtype Information	Engine switch ON	• Wire harness or connector damaged • Fuse • IGN1 relay • IGN2 relay • ACC relay • Engine switch • Passive Entry & Passive Start (PEPS) controller
B1508 00	Abnormality in ACC Circuit No Subtype Information		

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch ON.
- Use X-431 3G diagnostic tester to record and clear the DTCs stored in the PEPS system.
- Turn ignition switch to LOCK and wait for a few seconds.
- Use X-431 3G diagnostic tester to select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent ([See page 46-25](#)).

Diagnosis Procedure

1 Check fuse and relay

- Turn off all the electrical equipment and ignition switch.
- Disconnect the negative battery cable.
- Remove the fuses EF15 (15 A), EF48 (20 A) and EF43 (20 A) from engine compartment fuse and relay box.
- Remove the IGN1 relay, IGN2 relay and ACC relay from engine compartment fuse and relay box.
- Check if fuses and relays are blown or damaged.

NG

Repair or replace damaged fuses and relays.

OK

2 Check engine compartment fuse and relay box ground

- Check engine compartment fuse and relay box ground E-065 ([See page 68-42](#)).

NG

Repair or replace ground wire harness or ground point

OK

3

Check wire harness (battery - engine compartment fuse and relay box)

- Remove the IGN1 relay, IGN2 relay and ACC relay from engine compartment fuse and relay box.
- Connect the negative battery cable.
- Turn the digital multimeter to DC voltage band to check if voltage output from the terminal 30 of relay is 12 V.

NG

Repair or replace wire harness (battery - engine compartment fuse and relay box)

OK

4

Check engine compartment wire harness

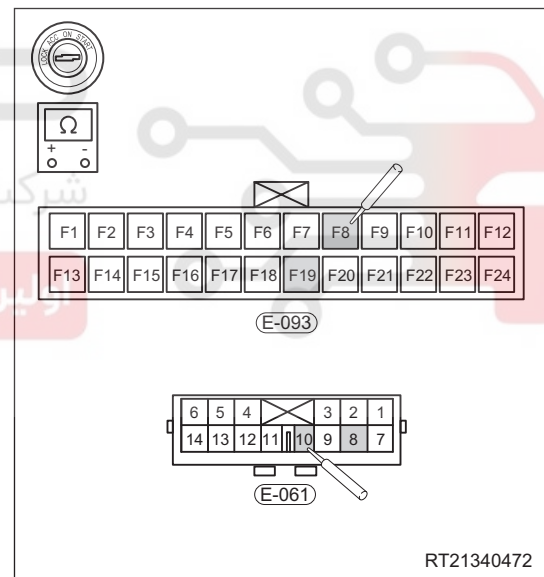
- Check the wire harness between engine compartment fuse and relay box connector E-093 and engine compartment wire harness connector E-061.

Check for Open

Multimeter Connection	Condition	Specified Condition
E-093 (F8) - E-061 (10)	Always	Continuity
E-093 (F19) - E-061 (8)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
E-093 (F8) or E-061 (10) - Body ground	Always	No continuity
E-093 (F19) or E-061 (8) - Body ground	Always	No continuity
E-093 (F8) or E-061 (10) - Battery positive	Always	No continuity
E-093 (F19) or E-061 (8) - Battery positive	Always	No continuity



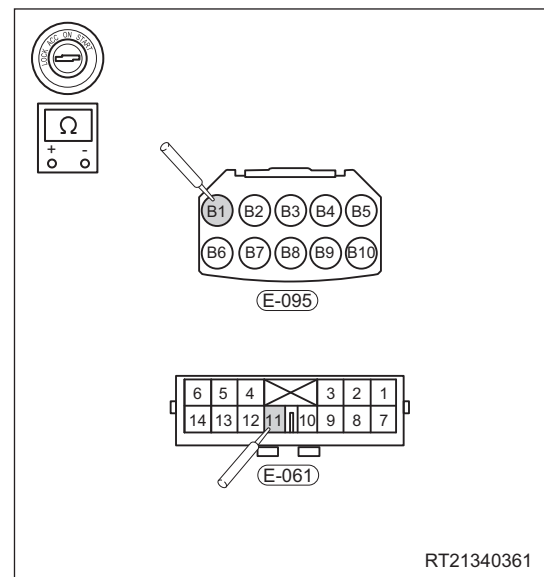
- b. Check the wire harness between engine compartment fuse and relay box connector E-095 and engine compartment wire harness connector E-061.

Check for Open

Multimeter Connection	Condition	Specified Condition
E-095 (B1) - E-061 (11)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
E-095 (B1) or E-061 (11) - Body ground	Always	No continuity
E-095 (B1) or E-061 (11) - Battery positive	Always	No continuity



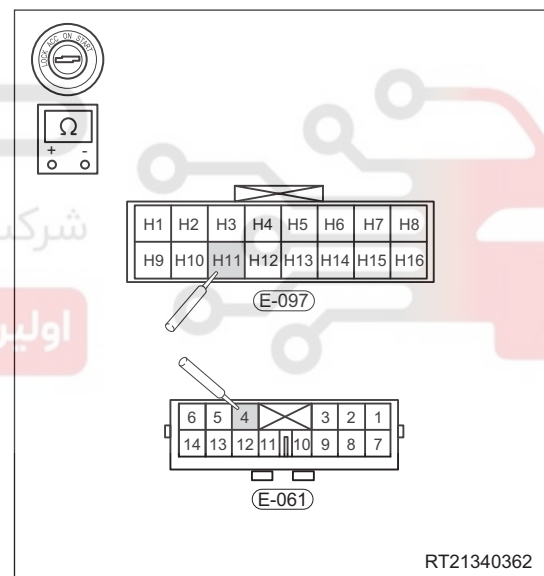
- c. Check the wire harness between engine compartment fuse and relay box connector E-097 and engine compartment wire harness connector E-061.

Check for Open

Multimeter Connection	Condition	Specified Condition
E-097 (I1) - E-061 (4)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
E-097 (I1) or E-061 (4) - Body ground	Always	No continuity
E-097 (I1) or E-061 (4) - Battery positive	Always	No continuity



46 - PEPS SYSTEM

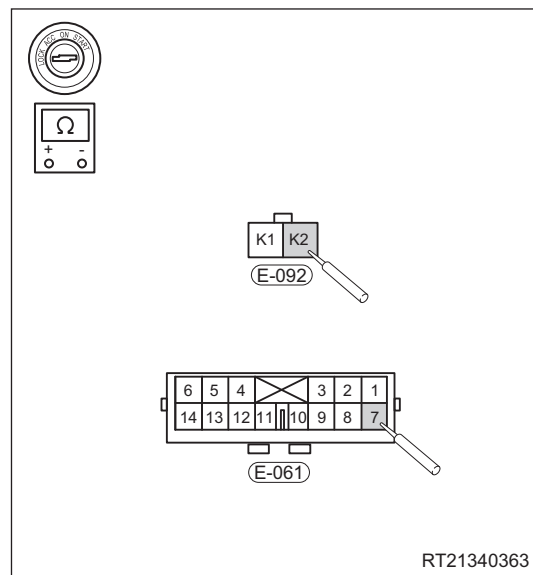
- d. Check the wire harness between engine compartment fuse and relay box connector E-092 and engine compartment wire harness connector E-061.

Check for Open

Multimeter Connection	Condition	Specified Condition
E-092 (K2) - E-061 (7)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
E-092 (K2) or E-061 (7) - Body ground	Always	No continuity
E-092 (K2) or E-061 (7) - Battery positive	Always	No continuity



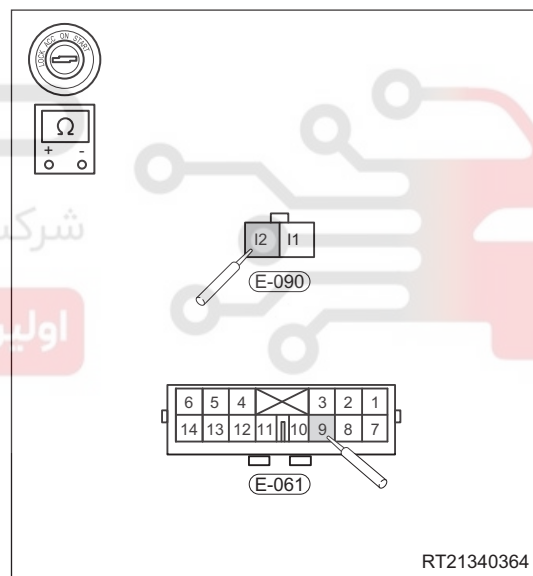
- e. Check the wire harness between engine compartment fuse and relay box connector E-090 and engine compartment wire harness connector E-061.

Check for Open

Multimeter Connection	Condition	Specified Condition
E-090 (I2) - E-061 (9)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
E-090 (I2) or E-061 (9) - Body ground	Always	No continuity
E-090 (I2) or E-061 (9) - Battery positive	Always	No continuity



46

NG

Repair or replace engine compartment wire harness

OK

5

Check instrument panel wire harness

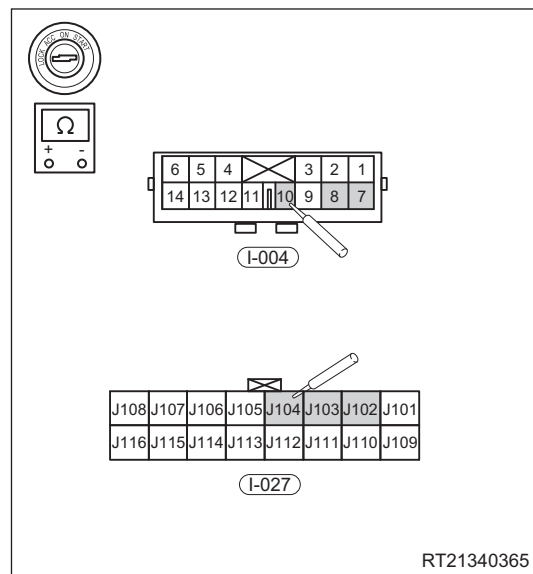
- a. Check the wire harness between instrument panel wire harness connectors I-004 and I-027.

Check for Open

Multimeter Connection	Condition	Specified Condition
I-004 (10) - I-027 (J104)	Always	Continuity
I-004 (8) - I-027 (J103)	Always	Continuity
I-004 (7) - I-027 (J102)	Always	Continuity

Check for Short

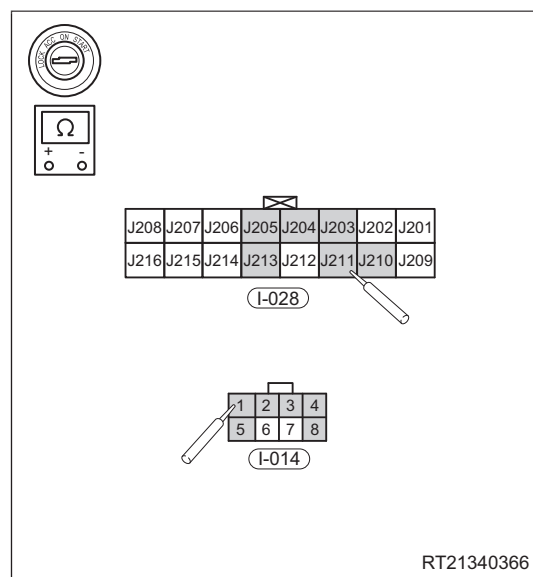
Multimeter Connection	Condition	Specified Condition
I-004 (10) or I-027 (J104) - Body ground/Battery positive	Always	No continuity
I-004 (8) or I-027 (J103) - Body ground/Battery positive	Always	No continuity
I-004 (7) or I-027 (J102) - Body ground/Battery positive	Always	No continuity



- b. Check the wire harness between instrument panel wire harness connectors I-004 and I-013.

Check for Open

Multimeter Connection	Condition	Specified Condition
I-028 (J211) - I-014 (1)	Always	Continuity
I-028 (J210) - I-014 (2)	Always	Continuity
I-028 (J213) - I-014 (3)	Always	Continuity
I-028 (J204) - I-014 (4)	Always	Continuity
I-028 (J203) - I-014 (5)	Always	Continuity
I-028 (J205) - I-014 (8)	Always	Continuity



46 - PEPS SYSTEM

Multimeter Connection	Condition	Specified Condition
I-028 (J211) or I-014 (1) - Body ground/Battery positive	Always	No Continuity
I-028 (J210) or I-014 (2) - Body ground/Battery positive	Always	No Continuity
I-028 (J213) or I-014 (3) - Body ground/Battery positive	Always	No Continuity
I-028 (J204) or I-014 (4) - Body ground/Battery positive	Always	No Continuity
I-028 (J203) or I-014 (5) - Body ground/Battery positive	Always	No Continuity
I-028 (J205) or I-014 (8) - Body ground/Battery positive	Always	No Continuity

NG

Repair or replace instrument panel wire harness

OK

6

Check engine switch

46

- Remove the engine switch ([See page 25-17](#)).
- Check the engine switch ([See page 25-24](#)).

NG

Repair or replace engine switch

OK

7

Confirm DTCs

- Connect related wire harness connectors.
- Connect the negative battery cable.
- Turn ignition switch ON.
- Connect X-431 3G diagnostic tester to Data Link Connector (DLC) to check if any DTC is detected.

NG

Repair or replace PEPS controller

OK

System operates normally

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

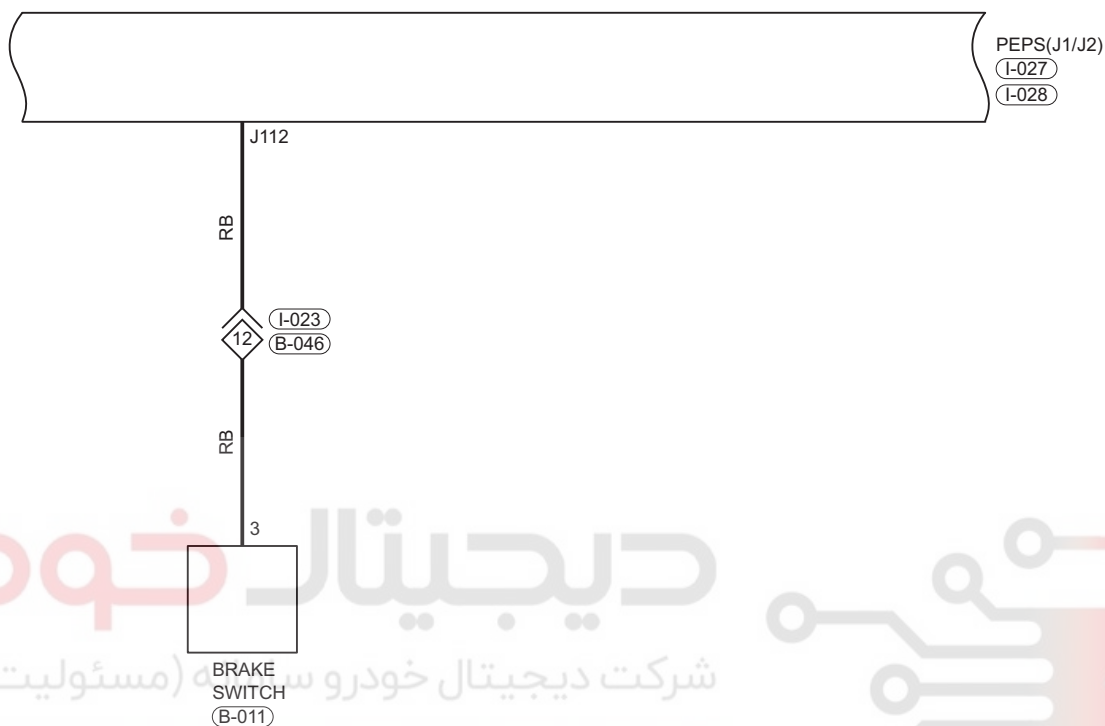


DTC

B1509 00

Abnormality in Brake Signal No Subtype Information

FOR 2.0L CVT



46

J208	J207	J206	J205	J204	J203	J202	J201
J216	J215	J214	J213	J212	J211	J210	J209

(I-028)
B

J108	J107	J106	J105	J104	J103	J102	J101
J116	J115	J114	J113	J112	J111	J110	J109

(I-027)
Gr

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18

(I-023)
W

2	1
4	3

(B-011)
Lg

ET21460540

DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B1509 00	Abnormality in Brake Signal No Subtype Information	Engine switch ON	- Wire harness or connector damaged - Brake switch assembly - Passive Entry & Passive Start (PEPS) controller

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch ON.
- Use X-431 3G diagnostic tester to record and clear the DTCs stored in the PEPS system.
- Turn ignition switch to LOCK and wait for a few seconds.
- Use X-431 3G diagnostic tester to select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent ([See page 46-25](#)).

Diagnosis Procedure**1 Check wire harness and connector**

- Turn off all the electrical equipment and ignition switch.
- Disconnect the negative battery cable.
- Disconnect the brake switch connector B-011 and PEPS controller connector I-027.
- Disconnect the instrument panel wire harness connector I-023 and body wire harness connector B-046.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check that the related connector pins are in good condition.

NG

Repair or replace related wire harness and connector

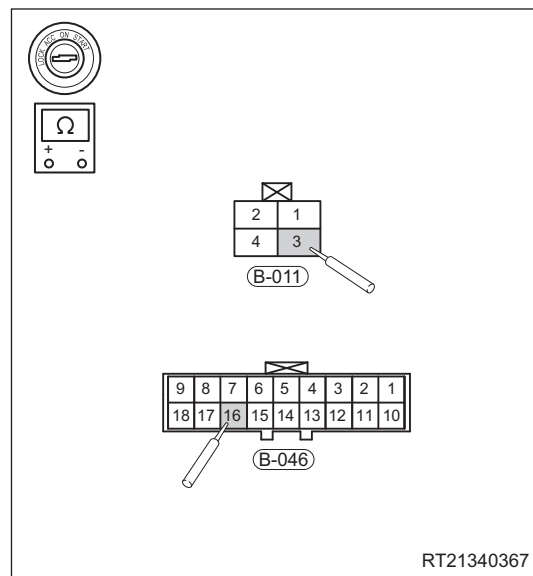
OK

2 Check body wire harness**Check for Open**

Multimeter Connection	Condition	Specified Condition
B-011 (3) - B-046 (16)	Always	Continuity

Check for Short

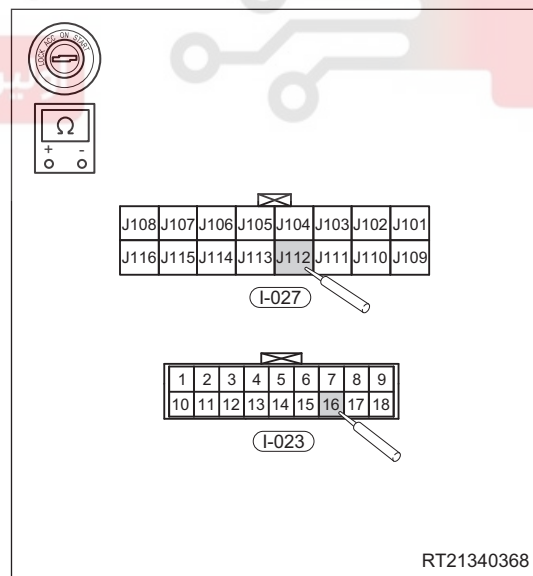
Multimeter Connection	Condition	Specified Condition
B-011 (3) or B-046 (16) - Body ground	Always	No continuity
B-011 (3) or B-046 (16) - Battery positive	Always	No continuity

**NG****Repair or replace body wire harness****OK****3 Check instrument panel wire harness****Check for Open**

Multimeter Connection	Condition	Specified Condition
I-027 (J112) - I-023 (16)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
I-027 (J112) or I-023 (16) - Body ground	Always	No continuity
I-027 (J112) or I-023 (16) - Battery positive	Always	No continuity

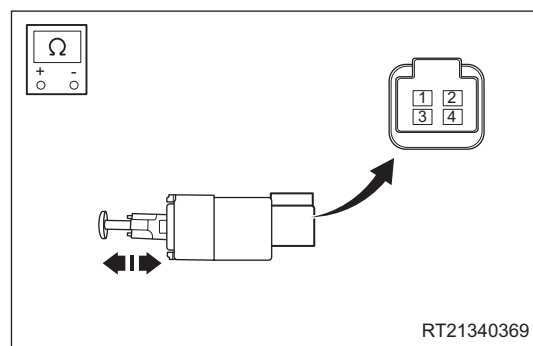
**46****NG****Repair or replace instrument panel wire harness****OK**

4 Check brake light switch assembly

- Remove the brake light switch assembly (See page 37-29).
- Check the brake light switch assembly.

Using ohm band of digital multimeter, check for continuity between terminals of brake light switch assembly according to the table below.

Multimeter Connection	Condition	Specified Condition
Terminal 1 - Terminal 3	Brake pedal depressed (switch pin released)	Continuity
Terminal 2 - Terminal 4	Brake pedal depressed (switch pin released)	No continuity
Terminal 1 - Terminal 3	Brake pedal released (switch pin pushed)	No continuity
Terminal 2 - Terminal 4	Brake pedal released (switch pin pushed)	Continuity

**NG****Replace brake light switch assembly****OK****5 Confirm DTCs**

- Connect related wire harness connectors.
- Connect the negative battery cable.
- Turn ignition switch ON.
- Connect X-431 3G diagnostic tester to Data Link Connector (DLC) to check if any DTC is detected.

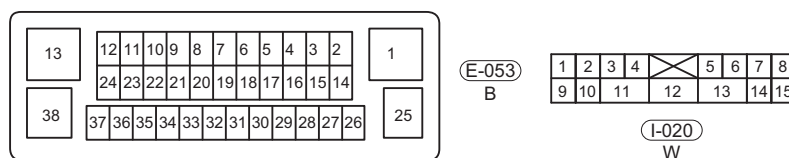
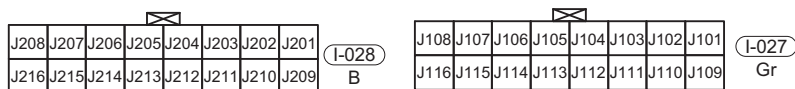
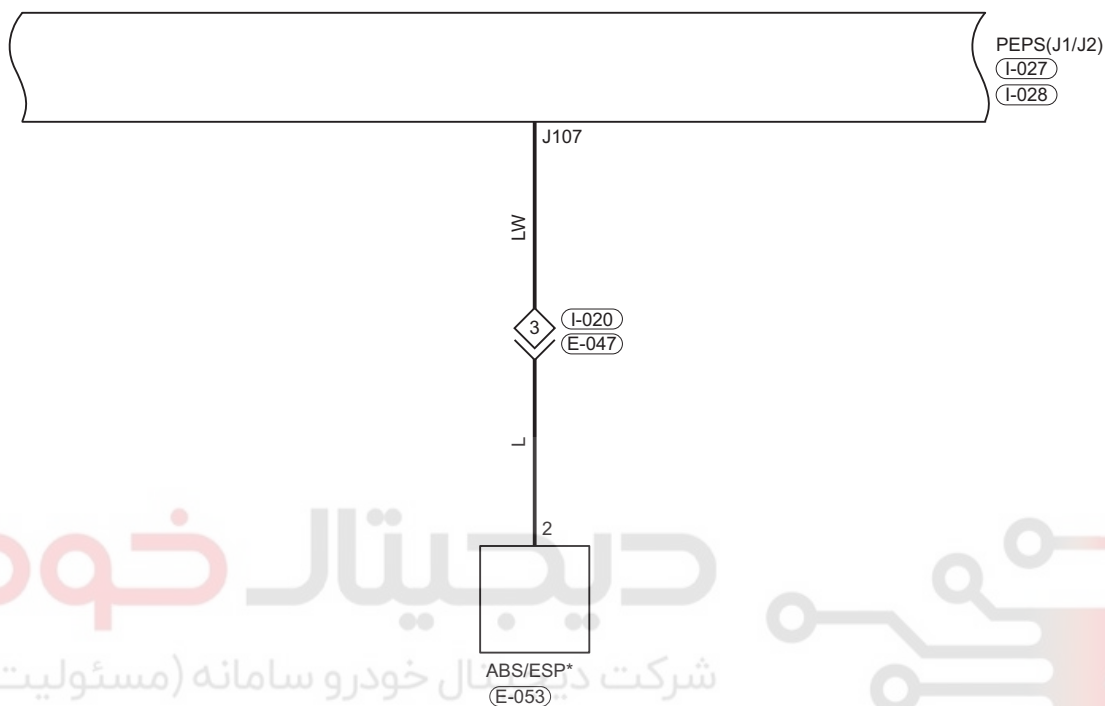
NG**Repair or replace PEPS controller****46****OK****System operates normally**

DTC

B1510 00

Abnormality on Wheel Speed Signal No Subtype Information

FOR 2.0L CVT



ET21460541

DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B1510 00	Abnormality on Wheel Speed Signal No Subtype Information	Engine switch ON	- Wire harness or connector damaged - ABS module - Passive Entry & Passive Start (PEPS) controller

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch ON.
- Use X-431 3G diagnostic tester to record and clear the DTCs stored in the PEPS system.
- Turn ignition switch to LOCK and wait for a few seconds.
- Use X-431 3G diagnostic tester to select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent ([See page 46-25](#)).

Diagnosis Procedure**1 Check wire harness and connector**

- Turn off all the electrical equipment and ignition switch.
- Disconnect the negative battery cable.
- Disconnect the ABS module connector E-053 and PEPS controller connector I-027.
- Disconnect the instrument panel wire harness connector I-020 and engine compartment wire harness connector E-047.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check that the related connector pins are in good condition.

NG

Repair or replace related wire harness and connector

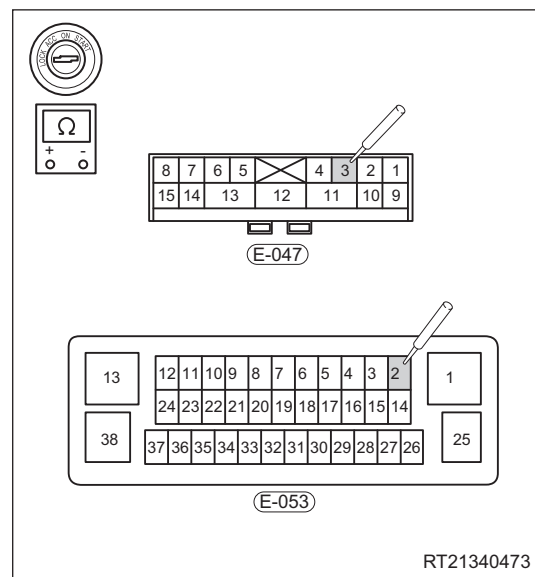
OK

2 Check engine compartment wire harness**Check for Open**

Multimeter Connection	Condition	Specified Condition
E-053 (2) - E-047 (3)	Always	Continuity

Check for Short

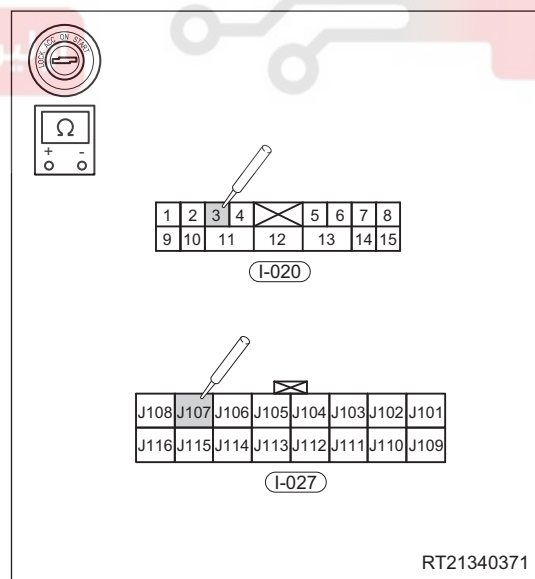
Multimeter Connection	Condition	Specified Condition
E-053 (2) or E-047 (3) - Body ground	Always	No continuity
E-053 (2) or E-047 (3) - Battery positive	Always	No continuity

**NG****Repair or replace engine compartment wire harness****OK****3 Check instrument panel wire harness****Check for Open**

Multimeter Connection	Condition	Specified Condition
I-020 (3) - I-027 (J107)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
I-020 (3) or I-027 (J107) - Body ground	Always	No continuity
I-020 (3) or I-027 (J107) - Battery positive	Always	No continuity

**46****NG****Repair or replace instrument panel wire harness****OK**

4 Confirm DTCs

- Connect related wire harness connectors.
- Connect the negative battery cable.
- Turn ignition switch ON.
- Connect X-431 3G diagnostic tester to Data Link Connector (DLC) to check if any DTC is detected.

OK**System operates normally****NG****5 Reconfirm DTCs after replacing ABS module**

- Remove the ABS/ESP module ([See page 36-86](#)).
- Replace the ABS/ESP module.
- Connect X-431 3G diagnostic tester to Data Link Connector (DLC) again to check if any DTC is detected.

NG**Repair or replace PEPS controller****OK****System operates normally**

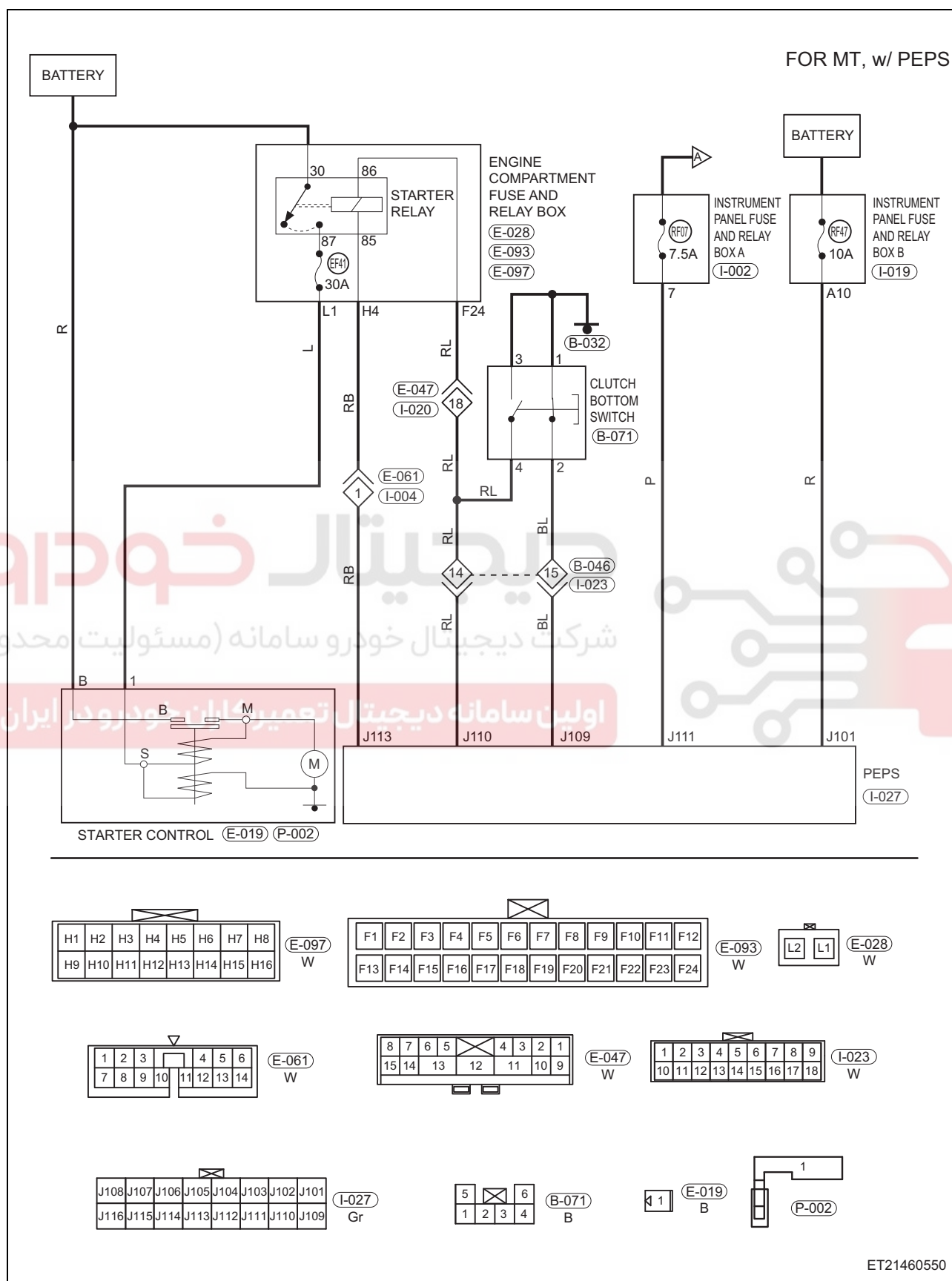
شرکت دیجیتال خودرو (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

DTC

B1514 00

Abnormality on STAR Power Supply No Subtype Information



DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B1514 00	Abnormality on STAR Power Supply No Subtype Information	Engine switch ON	• Wire harness or connector damaged • Fuse • Relay • Connector A (for CVT model) • Passive Entry & Passive Start (PEPS) controller

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch ON.
- Use X-431 3G diagnostic tester to record and clear the DTCs stored in the PEPS system.
- Turn ignition switch to LOCK and wait for a few seconds.
- Use X-431 3G diagnostic tester to select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent ([See page 46-25](#)).

Diagnosis Procedure**1 Check the fuses and relays**

- Turn off all the electrical equipment and ignition switch.
- Disconnect the negative battery cable.
- Remove the fuse EF41 (30 A) and starter relay from engine compartment fuse and relay box.
- Remove the fuses RF07 (7.5 A) and RF47 (10 A) from instrument panel fuse and relay box.
- Check if the fuses and relays are blown or damaged.

NG

Repair or replace damaged fuses and relays.

OK**2 Check engine compartment fuse and relay box ground**

- Check engine compartment fuse and relay box ground E-065 ([See page 68-42](#)).

NG

Repair or replace ground wire harness or ground point

OK

3 Check battery wire harness

- Check if the voltage between starter power supply wire harness and battery negative is battery voltage.
- Check if the voltage between engine compartment fuse and relay box power supply wire harness and battery negative is battery voltage.

NG

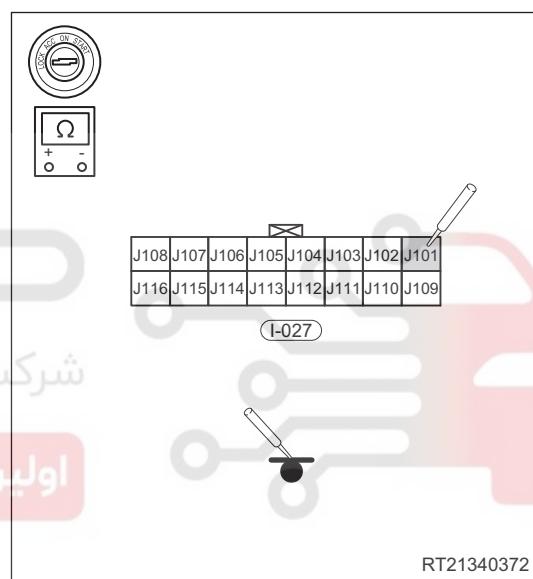
Repair or replace battery wire harness

OK

4 Check PEPS controller power supply voltage

- Disconnect the PEPS controller connector I-027.
- Check the voltage between terminal J101 of PEPS controller connector I-027 and body ground.

Multimeter Connection	Condition	Specified Condition
I-027 (J101) - Body ground	Always	11 - 14 V



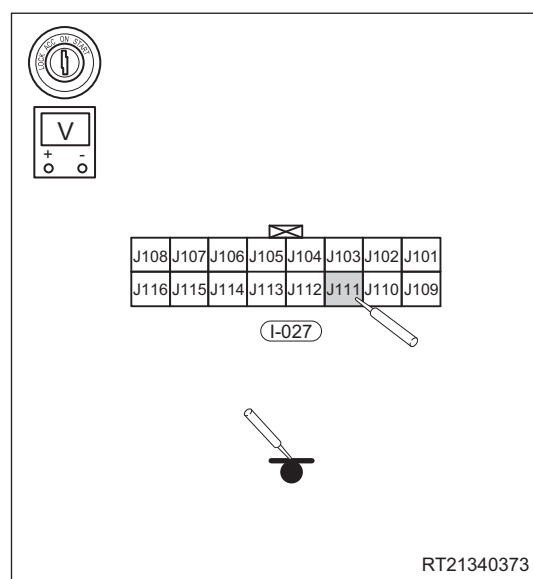
- Turn ignition switch ON.
- Check the voltage between terminal J111 of PEPS controller connector I-029 and body ground.

46

Multimeter Connection	Condition	Specified Condition
I-027 (J111) - Body ground	Always	11 - 14 V

OK

Go to step 6



NG

5 Check PEPS controller power supply circuit

- Turn ignition switch off.
- Disconnect the instrument panel fuse and relay box connectors I-002 and I-019.
- Check the wire harness between terminal A10 of instrument panel fuse and relay box connector I-019 and terminal J101 of PEPS controller connector I-027.

Check for Open

Multimeter Connection	Condition	Specified Condition
I-019 (A10) - I-027 (J101)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
I-019 (A10) or I-027 (J101) - Body ground	Always	No continuity
I-019 (A10) or I-027 (J101) - Battery positive	Always	No continuity

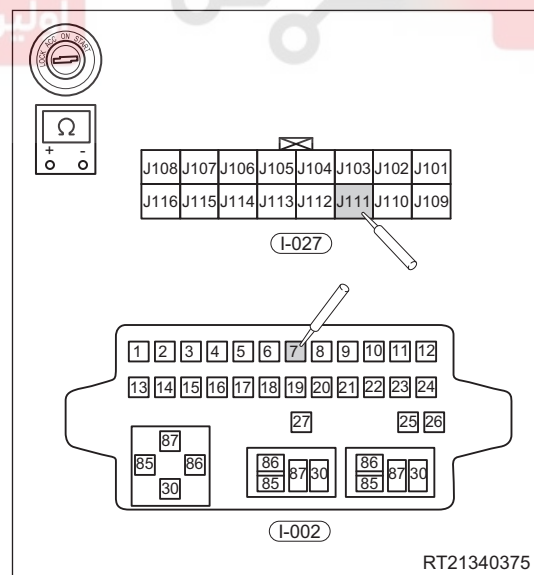
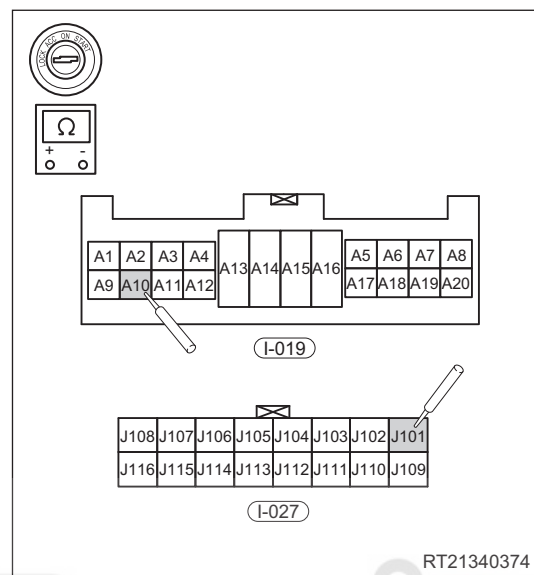
- Check the wire harness between terminal 7 of instrument panel fuse and relay box connector I-002 and terminal J111 of PEPS controller connector I-027.

Check for Open

Multimeter Connection	Condition	Specified Condition
I-002 (7) - I-027 (J111)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
I-002 (7) or I-027 (J111) - Body ground	Always	No continuity
I-002 (7) or I-027 (J111) - Battery positive	Always	No continuity



46 - PEPS SYSTEM

NG

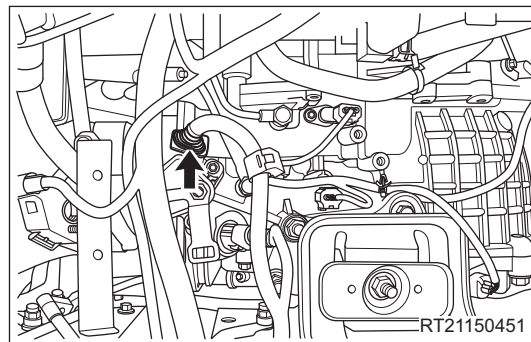
Repair or replace related wire harness or connector (instrument panel fuse and relay box - PEPS controller)

OK

6

Check CVT connector A

a. Disconnect the CVT connector A (arrow).



b. Check the CVT connector A.

Gearshift Position	Terminal No.	Specified Condition
P	1 - 7, 9 - 10	Continuity
R	7 - 8	
N	2 - 7, 9 - 10	
D	3 - 7	
L	4 - 7	

NG

Repair or replace CVT connector A

OK

7

Check wire harness (instrument panel - engine compartment)

- Disconnect the engine compartment wire harness connector E-067.
- Check the wire harness between PEPS controller connector I-029 and engine compartment fuse and relay box connector E-067.

Check for Open

Multimeter Connection	Condition	Specified Condition
I-027 (J110) - E-097 (H4)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
I-027 (J110) or E-097 (H4) - Body ground	Always	No continuity
I-027 (J110) or E-097 (H4) - Battery positive	Always	No continuity

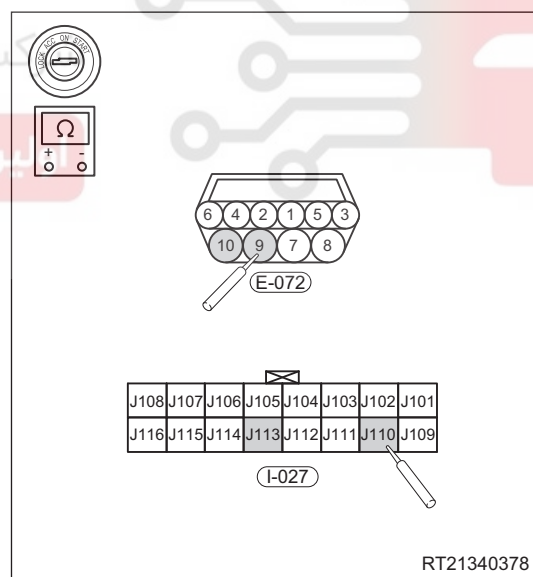
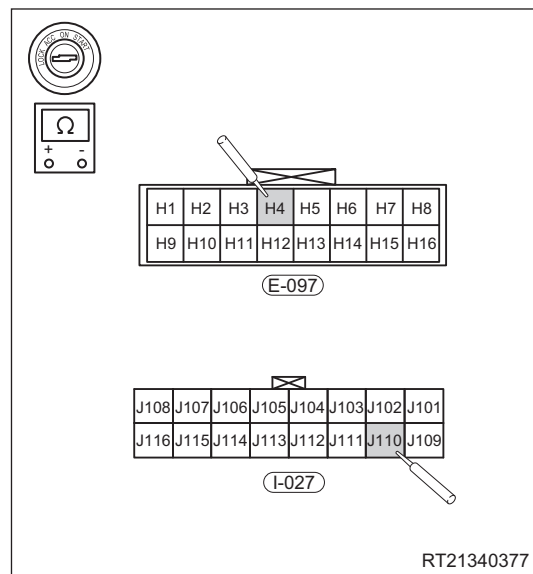
- Check the wire harness between PEPS controller connector I-027 and CVT connector A I-072.

Check for Open

Multimeter Connection	Condition	Specified Condition
I-027 (J110) - E-072 (9)	Always	Continuity
I-027 (J113) - E-072 (10)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
I-027 (J110) or E-072 (9) - Body ground	Always	No continuity
I-027 (J113) or I-072 (10) - Body ground	Always	No continuity
I-027 (J110) or E-072 (9) - Battery positive	Always	No continuity
I-027 (J113) or E-072 (10) - Battery positive	Always	No continuity



46 - PEPS SYSTEM

NG

Repair or replace wire harness
(instrument panel - engine compartment)

OK

System operates normally

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Electric Steering Column Lock (for MT)

DTC	B150D 00	Abnormality on ESCL LCK_GND No Subtype Information
DTC	B150E 00	Abnormality on ESCL LCK_PS No Subtype Information
DTC	B150F 00	ESCL Anti-scanning No Subtype Information
DTC	B1511 00	Abnormality in ESCL Lock No Subtype Information
DTC	B1512 00	Abnormality in ESCL Unlock No Subtype Information
DTC	B1513 00	ESCL External Failure No Subtype Information

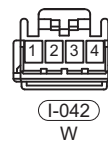
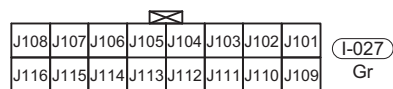
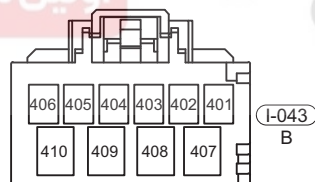
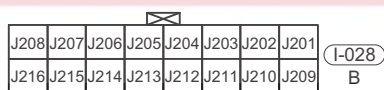
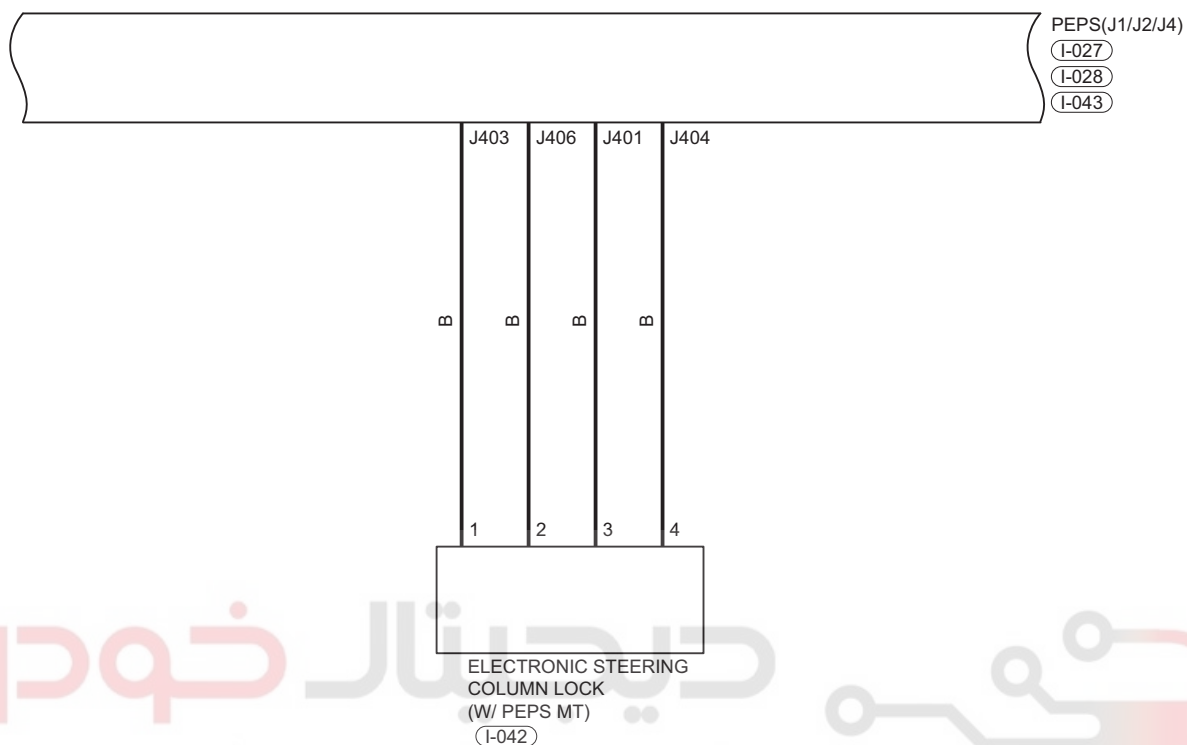
دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



FOR 2.0L MT
FOR 1.5T MT
FOR 1.5T CVT



ET21460542

DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B150D 00	Abnormality on ESCL LCK_GND No Subtype Information	Ignition switch ON	• Wire harness or connector is damaged • Fuse • IGN1 relay • Electronic steering column lock • Passive Entry & Passive Start (PEPS) controller
B150E 00	Abnormality on ESCL LCK_PS No Subtype Information		
B150F 00	ESCL Anti-scanning No Subtype Information		
B1511 00	Abnormality in ESCL Lock No Subtype Information		
B1512 00	Abnormality in ESCL Unlock No Subtype Information		
B1513 00	ESCL External Failure No Subtype Information		
U0329 87	Lost Communication with ESCL Missing Message	Ignition switch ON	• Wire harness or connector is damaged • Passive Entry & Passive Start (PEPS) controller

CAUTION

- When performing electrical equipment diagnosis and test, always refer to circuit diagram for related circuit and component information.

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester to record and clear DTCs stored in PEPS system.
- Turn ignition switch to LOCK and wait for a few seconds.
- Use X-431 3G diagnostic tester to read DTCs.

If DTC is not detected, malfunction indicated by DTC is intermittent

Diagnosis Procedure

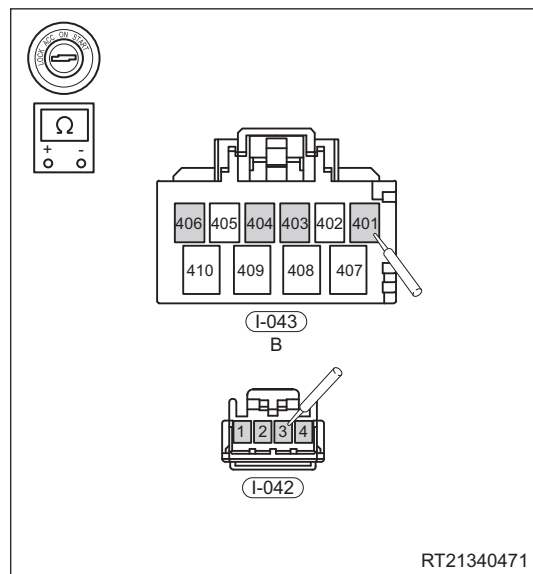
If DTC is not detected, malfunction indicated by DTC is intermittent

1	Check PEPS control module power supply circuit (PEPS control module assembly - battery)
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46 - PEPS SYSTEM

- Connect the negative battery cable.
- Turn ignition switch to LOCK.
- Disconnect the PEPS control module assembly connector I-043.
- Using a digital multimeter, check for continuity between terminals I-043 (J401), I-043 (J403), I-043 (J404), I-043 (J406) of PEPS control module assembly and terminals I-042 (3), I-042 (1), I-042 (4), I-042 (2) of electronic steering column lock according to table below.

Multimeter Connection	Condition	Specified Condition
B-043 (J401) - I-042 (3)	Always	Continuity
I-043 (J403) - I-042 (1)	Always	Continuity
I-043 (J404) - I-042 (4)	Always	Continuity
I-043 (J406) - I-042 (2)	Always	Continuity



NG

Repair or replace body wire harness and connector

OK

ON-VEHICLE SERVICE

PEPS Low Frequency Antenna

Removal

CAUTION

- Be sure to wear safety equipment to prevent accidents, when removing PEPS low frequency antenna.
- Be careful not to damage antenna, when removing PEPS low frequency antenna.
- Be careful not to damage components, when removing PEPS components.

1. Remove the PEPS low frequency antenna ([See page 50-54](#)).

Installation

Installation is in the reverse order of removal.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



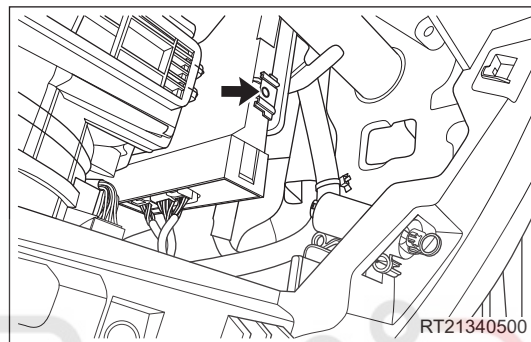
PEPS Control Module

Removal

CAUTION

- Be sure to wear safety equipment to prevent accidents, when removing PEPS low frequency antenna.
- Be careful not to damage antenna, when removing PEPS low frequency antenna.
- Be careful not to damage components, when removing PEPS components.

1. Remove the instrument panel (See page 59-21).
2. Remove the PEPS control module.
 - a. Disconnect 3 connectors from PEPS control module and remove 2 fasteners (arrow).



- b. Remove the PEPS control module.

Installation

Installation is in the reverse order of removal.

CAUTION

- When installing PEPS control module, make sure connectors on PEPS control module are well fitted with body wire harness.
- Check if PEPS control module functions properly after installation.

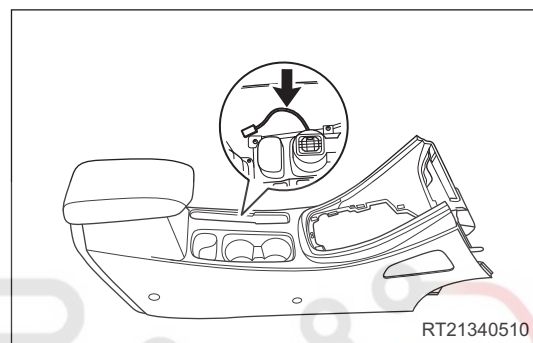
Immobilizer Coil

Removal

CAUTION

- Be sure to wear safety equipment to prevent accidents, when removing immobilizer coil.
- Be careful not to damage coil, when removing immobilizer coil.

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the auxiliary fascia console assembly ([See page 59-11](#)).
4. Remove the immobilizer coil.
 - a. Disconnect connector and remove immobilizer coil.



Installation

Installation is in the reverse order of removal.

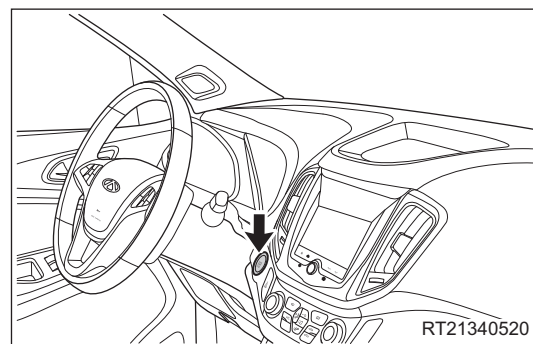
CAUTION

- Tighten fixing bolt to specified torque, when installing immobilizer coil.
- Install connector in place, when installing immobilizer coil.
- Check PEPS system for proper operation, after installing immobilizer coil.

Passive Entry & Passive Start Button

Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the instrument panel assembly ([See page 59-11](#)).
4. Remove the passive entry & passive start button.
 - a. As shown in illustration, disconnect connector and remove passive entry & passive start button (arrow).



Installation

Installation is in the reverse order of removal.

CAUTION

- Install fixing clip to specified position, when installing passive entry & passive start button.
- Install connector in place, when installing passive entry & passive start button.
- Check PEPS system for proper operation, after installing passive entry & passive start button.

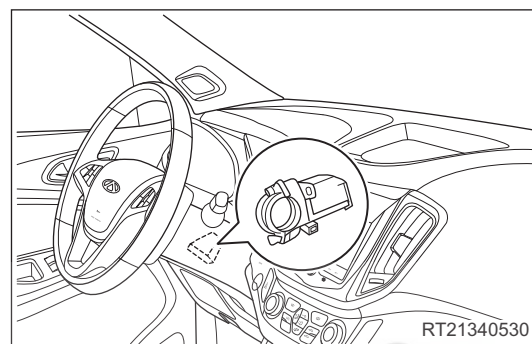
Electronic Steering Column Lock (for MT)

Removal

CAUTION

- Be sure to wear safety equipment to prevent accidents, when removing steering column.
- Be careful not to damage steering column lock, when removing steering column.

1. Remove the steering column (for MT) ([See page 39-10](#)).
2. Remove the electronic steering column lock.
 - a. As shown in illustration, remove electronic steering column lock from steering column.



Installation

Installation is in the reverse order of removal.

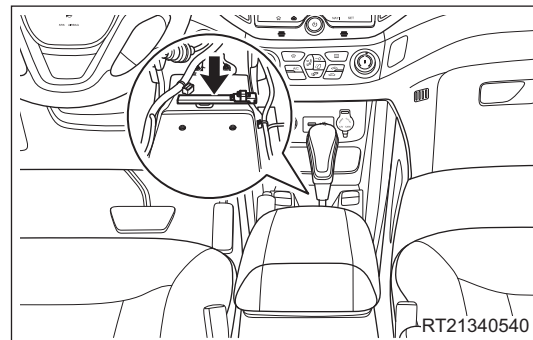
CAUTION

- Tighten fixing bolt to specified torque, when installing electronic steering column lock.
- Install connector in place, when installing electronic steering column lock.
- Check PEPS system for proper operation, after installing electronic steering column lock.

Low Frequency Antenna

Removal

1. Remove the A/C control panel assembly (See page 42-66).
2. Remove the auxiliary fascia console assembly.
3. Remove the front low frequency antenna.
 - a. Disconnect connector and remove front low frequency antenna.



Installation

Installation is in the reverse order of removal.

CAUTION

- Install connector in place, when installing front low frequency antenna.
- Check PEPS system for proper operation, after installing front low frequency antenna.